



1,3-DIARYLPROP-2-EN-1-ONES, COMPOSITIONS CONTAINING
THEM AND USE THEREOF

The present invention relates to novel chemical compounds, particularly novel 1,3-diarylprop-
5 2-en-1-ones, to compositions containing them and to their use as medicinal products.

More particularly, the invention relates to novel specific 1,3-diarylprop-2-en-1-ones with anticancer activity, and in particular inhibitory
10 activity on tubulin polymerization.

1,3-diarylprop-2-en-1-ones, or "chalcones", have been widely described in the literature for more than a century. However, although certain publications deal with therapeutic applications of chalcones, few of
15 them mention their use in oncology.

Among the documents describing the use of chalcones in oncology, mention may be made of the following patents and publications:

- WO 01/72980, discloses substituted
20 chalcones with anticancer and anti-inflammatory activity. These chalcones are characterized in that they are 1-(3,5-dimethoxyphenyl)prop-2-en-1-one derivatives in which the 3-phenyl group is never substituted with an amino group.
- 25 - WO 99/22728, especially claims, in general, substituted chalcones, for inhibiting the 5 α -reductase activity towards steroid hormones, for the purpose of treating pathologies such as alopecia, baldness,



obesity, skin diseases, prostate cancer and breast cancer. No specific example of a chalcone is presented in the description, only the structure of the reference product HZIV 82 (E-3-(4-N,N-dimethylaminophenyl)-

5 1-(3,4,5-trimethoxyphenyl)prop-2-en-1-one) is presented in Figure 2.

- WO 99/00114, claims the use of chalcones in which the prop-2-en-1-one chain may be saturated or unsaturated. The preparation examples are limited to
10 certain families of chalcones. For each of the examples presented, one of the two phenyl nuclei is mono-substituted. When an amino group is present, it is in the N,N-dimethylamino form and it is the only substituent of one of the two phenyl nuclei borne by
15 the propenone chain.

Two products are cited as having anticancer activity. These are 1-(4-hydroxyphenyl)-3-(2,3-dimethoxyphenyl)-prop-2-en-1-one and 1-(4-hydroxyphenyl)-3-(2,5-dimethoxyphenyl)-prop-2-en-1-one.

20 - WO 98/58913, presents chalcones derived from 1-(2-hydroxyphenyl)-3-arylprop-2-en-1-one with antiproliferative activity.

- EP 288 794-B1, claims the use in oncology of 1-(aryl)-3-(4-X-phenyl)prop-2-en-1-ones in which X
25 represents a substituent NR_2 or NHCOR , where R = alkyl.

- WO 91/17749, claims a method for treating cancer especially using chalcones. These chalcones are described and claimed in very general terms. Thus, any

substituents can replace any hydrogen, whether said hydrogen is on the prop-2-en-1-one chain or on a phenyl nucleus. None of the chalcones described bear amino groups on either of the aryl groups.

5 - Michael L. Edwards et al., in the article published in *J. Med. Chem.* 1990, vol. 33, pp. 1948-1954, present chalcones that may be used as antimitotic agents. Chalcones in which the phenyl in position 3 on the prop-2-en-1-one chain is substituted
10 either (i) in position 4 with NHC(O)CH_3 , $\text{C(CH}_3)_3$, SCH_3 , S(O)CH_3 , $\text{N(CH}_3)_2$, NH_2 , NO_2 , F , CN , $\text{OCH(CH}_3)_2$, Br , CF_3 , N-morpholino , NH-butyl , O-butyl , NHC(O)OCH_3 , O-butyl or $\text{N(C}_2\text{H}_5)_2$, or (ii) in position 3 with NHC(O)CH_3 , $\text{N(CH}_3)_2$, NH_2 or NO_2 , are presented and tested *in vitro* on cancer
15 cell lines. None of the chalcones bears another group in addition to the amino group on one of the aryl nuclei.

 - Sylvie Ducki et al., in the article published in *Bioorg. Med. Chem. Letters* 1988, vol. 8 pp
20 1051-1056, present chalcones with antimitotic activity. Their study is based on the work by Michael L. Edwards et al. cited above. The authors observed that the replacement of a 4-N,N-dimethylamino substituent with 4-methoxy and 3-hydroxy substituents considerably
25 improves the antimitotic activity, especially with respect to K562 cells.

Now, it has been found, surprisingly, that products containing the 1,3-diphenyl-prop-2-en-1-one

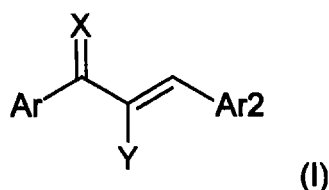
unit in which the phenyl in position 3 is substituted with two different groups, at least one of which is an amine or an amine precursor, have large inhibitory activity on tubulin polymerization.

5 Furthermore, these products very strongly induce necrosis *in vivo*, which is a highly favorable result with regard to the subsequent development of medicinal products that are effective for treating cancers.

10 Next, it has been observed that, with the products of the invention, the tumor necrosis survives in the minutes following the injection of the test product, and that the core of the tumor is totally destroyed within a day, with no apparent effect on the
15 neighboring healthy cells. These products might consequently be useful for treating patients suffering from inoperable tumors, that is to say tumors whose surgical removal presents a very major risk (i) to the immediate survival of the patient, or (ii) to the
20 possible consequences on his quality of life (invalidation).

 Finally, the products of the invention are generally rapidly metabolized by the body, which limits their long-term effect.

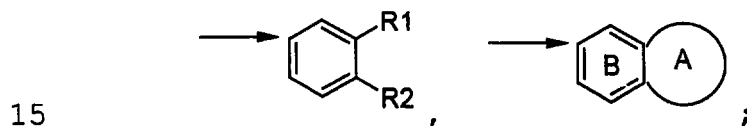
25 These products correspond to formula (I) below:



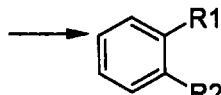
in which

- a) Y is selected from the group consisting of
 halogen, C₁-C₇ linear alkyl, C₁-C₇ branched alkyl,
 5 substituted C₁-C₇ linear alkyl, substituted C₁-C₇
 branched alkyl, cycloalkyl, substituted
 cycloalkyl, NH₂, NH(R₄), N(R₄)₂, aralkyl,
 substituted aralkyl, COOH, COO(R₄), CONH₂,
 CONH(R₄), CON(R₄)₂, CN, in which R₄ represents an
 10 optionally substituted C₁-C₇ alkyl or cycloalkyl
 group and, when two radicals R₄ are present, they
 may be linked together to form a ring;

- b) Ar₂ is selected from the group consisting of:



in which:



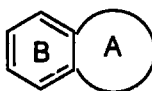
- 1) when Ar₂ is $\text{C}_6\text{H}_4(\text{R}_1)(\text{R}_2)$, then one of the
 radicals R₁ and R₂ is selected from the group
 consisting of NH₂, NH₂·HZ, NHC(O)-amino acid,
 20 NH-(GP); N=(GP); in which the amino acid is
 preferably serine; in which GP is a
 metabolizable substituent allowing the
 functional group to be changed:

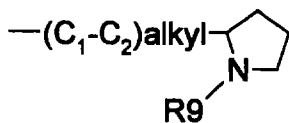


and in which HZ is an organic or mineral acid; and

the other radical R1 or R2 is selected from
 5 the group consisting of CH₃, C₂H₅, OCH₃, OC₂H₅,
 SCH₃, NH(R5), N(R5)₂, N(R5)(GP), N(R5)C(O)-
 amino acid, in which R5 represents a C₁-C₂
 alkyl group and, when two radicals R5 are
 present, they may be linked together to form
 10 a ring;



2) when Ar2 is , then A is a 5- or
 6-membered heterocycle, fused to a benzene
 ring B, said heterocycle A is aromatic or
 non-aromatic, comprising one or two hetero
 15 atoms, at least one of which is a nitrogen
 atom linked directly to B and bearing a side
 chain R8, in which R8 is chosen from the
 group consisting of H, (C₁-C₃)alkyl,
 (C₁-C₃)alkyl-OH, (C₁-C₃)alkyl-O(C₁-C₃)alkyl,
 20 (C₁-C₃)alkyl-NH₂, (C₁-C₃)alkyl-NH(R7),
 (C₁-C₃)alkyl-N(R7)₂,



, in which R9 is chosen from
 H, (C₁-C₃)alkyl, in which each R7
 independently represents a (C₁-C₃)alkyl or

(C₃-C₇) cycloalkyl group, or alternatively, when two radicals R₇ are present, they are linked together to form a 5-membered heterocycle;

5

- c) X is selected from the group consisting of O, NOH, NO(R₃), in which R₃ is selected from the group consisting of H, C₁-C₇ linear alkyl, C₁-C₇ branched alkyl, cycloalkyl, C₁-C₇ linear haloalkyl, C₁-C₇ branched haloalkyl, substituted cycloalkyl, halocycloalkyl, aralkyl, substituted aralkyl; and
- d) Ar is selected from the group consisting of 2,5-dimethoxyphenyl, 2,3,4-trimethoxyphenyl, 3,4,5-trimethoxyphenyl, 2,3,5-trimethoxyphenyl, 2,4,5-trimethoxyphenyl, 2,3,4,5-tetramethoxyphenyl, 3-methoxy-4,5-methylenedioxy, 3-methoxy-4,5-ethylenedioxy, 2-methoxy-4,5-methylenedioxy, 2-methoxy-4,5-ethylenedioxy, 2-methoxy-3,4-methylenedioxy and 2-methoxy-3,4-ethylenedioxy radicals.

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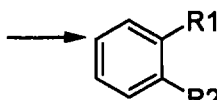
Preferably, X is oxygen.

Ar is preferably 3,4,5-trimethoxyphenyl or 3-methoxy-4,5-methylenedioxy.

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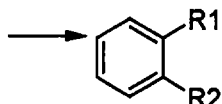
Y is preferably selected from the group consisting of Cl, Br, CH₃ and CH₂CH₃.

A first preferred product in accordance with the invention preferably contains a substituent Ar₂



such that Ar2 = , in which R1 and R2 are selected from the group of combinations (R1, R2) consisting of, respectively, (NH₂, OCH₃), (NH₂, OC₂H₅), (NH₂, N(R5)₂), (N(R5)₂, OCH₃), (N(R5)₂, OC₂H₅), (N(R5)₂, NH₂), (OCH₃, NH₂), (OC₂H₅, NH₂).

A first more preferred product in accordance with the invention contains a substituent Ar2 such that



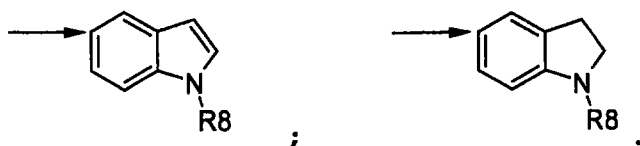
Ar2 = , in which one of the radicals R1 and R2 is NHC(O)-amino acid, and in that the amino acid is selected from natural amino acids and unnatural amino acids. Preferred amino acids are chosen from the group consisting of glycine, N-methylproline, serine, lysine and N-ω-nitroarginine, and the amino acid is in enantiomerically pure or racemic form, or is enriched in one enantiomer.

The products in accordance with the invention are present in free or salified form, preferably in salified form. One preferred salified form is a hydrochloride.

A second preferred product in accordance with the invention preferably contains a substituent Ar2



such that Ar2 = , in which Ar2 is selected from the group consisting of



R8 preferably represents a methyl, hydroxymethyl or 2-dimethylaminoethyl group.

- A preferred product in accordance with the invention may be chosen from the group consisting of
- E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone;
 - E-3-(4-Amino-3-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone;
 - 10 E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(2,5-dimethoxyphenyl)propenone hydrochloride;
 - E-3-(3-Amino-4-methoxyphenyl)-2-bromo-1-(3,4,5-trimethoxyphenyl)propenone;
 - E-2-Methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone;
 - 15 E-2-Methyl-3-(1-methyl-2,3-dihydro-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone;
 - E-2-Methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenoneoxime;
 - 20 E-2-Methyl-3-[1-(2-dimethylaminoethyl)-1-H-indol-5-yl]-1-(3,4,5-trimethoxyphenyl)propenone hydrochloride;
 - E-2-Methyl-3-(1-hydroxymethyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone;
 - E-2-Methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3-methoxy-25 4,5-methylenedioxyphenyl)propenone;

E-2-Methyl-3-[1-(2-dimethylaminoethyl)-1-H-indol-5-yl]-
 1-(3-methoxy-4,5-methylenedioxyphenyl)propenone;
 (S)-2,6-Diaminohexanoic acid {2-methoxy-5-[2-methyl-3-
 oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide
 5 dihydrochloride;
 3-(3-[N- ω -nitro-L-arginineamido]-4-methoxyphenyl)-2-
 methyl-1-(3,4,5-trimethoxyphenyl)propenone;
 1-Methylpyrrolidine-2-carboxylic acid {2-methoxy-5-[2-
 methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]-
 10 phenyl}amide hydrochloride;
 Aminoacetic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-
 trimethoxyphenyl)propenyl]phenyl}amide hydrochloride.

A more preferred product in accordance with
 the invention is (S)-2-amino-3-hydroxypropanoic acid
 15 {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxy-
 phenyl)propenyl]phenyl}amide hydrochloride.

The list of products below is also
 representative of the invention:

E-3-(3-Amino-4-methoxyphenyl)-2-chloro-1-(3,4,5-tri-
 20 methoxyphenyl)propenone
 E-3-(3-Amino-4-methoxyphenyl)-2-bromo-1-(3,4,5-trimeth-
 oxyphenyl)propenone
 E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(3,4,5-tri-
 methoxyphenyl)propenone
 25 E-3-(3-Amino-4-methoxyphenyl)-2-ethyl-1-(3,4,5-tri-
 methoxyphenyl)propenone
 E-3-(3-Amino-4-methoxyphenyl)-2-propyl-1-(3,4,5-tri-
 methoxyphenyl)propenone

- E-3-(3-Amino-4-methoxyphenyl)-2-(1-methylethyl)-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-chloro-1-(3,4,5-trimethoxyphenyl)propenone
- 5 E-3-(3-Amino-4-ethoxyphenyl)-2-bromo-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-ethyl-1-(3,4,5-trimethoxyphenyl)propenone
- 10 E-3-(3-Amino-4-ethoxyphenyl)-2-propyl-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-(1-methylethyl)-1-(3,4,5-trimethoxyphenyl)propenone
- 15 E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-chloro-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-bromo-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone
- 20 E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-ethyl-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-propyl-1-(3,4,5-trimethoxyphenyl)propenone
- 25 E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-(1-methylethyl)-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-methoxyphenyl]-2-chloro-1-(3,4,5-trimethoxyphenyl)propenone

- E-3-[4-Amino-3-methoxyphenyl)-2-bromo-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone
- 5 E-3-[4-Amino-3-methoxyphenyl)-2-ethyl-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-methoxyphenyl)-2-propyl-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-methoxyphenyl)-2-(1-methylethyl)-
- 10 1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-ethoxyphenyl)-2-chloro-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-ethoxyphenyl)-2-bromo-1-(3,4,5-trimethoxyphenyl)propenone
- 15 E-3-[4-Amino-3-ethoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-ethoxyphenyl)-2-ethyl-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-ethoxyphenyl)-2-propyl-1-(3,4,5-trimethoxyphenyl)propenone
- 20 E-3-[4-Amino-3-ethoxyphenyl)-2-(1-methylethyl)-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-chloro-1-(3,4,5-trimethoxyphenyl)propenone
- 25 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-bromo-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone

- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-ethyl-
1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-propyl-
1-(3,4,5-trimethoxyphenyl)propenone
- 5 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-(1-methyl-
ethyl)-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-chloro-
1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-bromo-1-
10 (3,4,5-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-methyl-
1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-ethyl-
1-(3,4,5-trimethoxyphenyl)propenone
- 15 E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-
2-propyl-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-
2-(1-methylethyl)-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-chloro-
20 1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-bromo-
1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-methyl-
1-(3,4,5-trimethoxyphenyl)propenone
- 25 E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-ethyl-
1-(3,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-
2-propyl-1-(3,4,5-trimethoxyphenyl)propenone

- E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-
2-(1-methylethyl)-1-(3,4,5-trimethoxyphenyl)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-chloro-1-(2,5-dimethoxyphenyl)propenone
- 5 E-3-(3-Amino-4-methoxyphenyl)-2-bromo-1-(2,5-dimethoxyphenyl)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(2,5-dimethoxyphenyl)propenone hydrochloride
- E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(2,5-dimethoxyphenyl)propenone
- 10 E-3-(3-Amino-4-methoxyphenyl)-2-ethyl-1-(2,5-dimethoxyphenyl)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-propyl-1-(2,5-dimethoxyphenyl)propenone
- 15 E-3-(3-Amino-4-methoxyphenyl)-2-(1-methylethyl)-1-(2,5-dimethoxyphenyl)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-chloro-1-(2,5-dimethoxyphenyl)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-bromo-1-(2,5-dimethoxyphenyl)propenone
- 20 E-3-(3-Amino-4-ethoxyphenyl)-2-methyl-1-(2,5-dimethoxyphenyl)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-ethyl-1-(2,5-dimethoxyphenyl)propenone
- 25 E-3-(3-Amino-4-ethoxyphenyl)-2-propyl-1-(2,5-dimethoxyphenyl)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-(1-methylethyl)-1-(2,5-dimethoxyphenyl)propenone

- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-chloro-
1-(2,5-dimethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-bromo-
1-(2,5-dimethoxyphenyl)propenone
- 5 E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-methyl-
1-(2,5-dimethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-ethyl-
1-(2,5-dimethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-propyl-
10 1-(2,5-dimethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-(1-methyl-
ethyl)-1-(2,5-dimethoxyphenyl)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-chloro-1-(2,5-dimeth-
oxyphenyl)propenone
- 15 E-3-(4-Amino-3-methoxyphenyl)-2-bromo-1-(2,5-dimethoxy-
phenyl)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-methyl-1-(2,5-dimeth-
oxyphenyl)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-ethyl-1-(2,5-dimethoxy-
20 phenyl)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-propyl-1-(2,5-dimeth-
oxyphenyl)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-(1-methylethyl)-1-(2,5-
dimethoxyphenyl)propenone
- 25 E-3-(4-Amino-3-ethoxyphenyl)-2-chloro-1-(2,5-dimethoxy-
phenyl)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-bromo-1-(2,5-dimethoxy-
phenyl)propenone

- E-3-(4-Amino-3-ethoxyphenyl)-2-methyl-1-(2,5-dimethoxyphenyl)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-ethyl-1-(2,5-dimethoxyphenyl)propenone
- 5 E-3-(4-Amino-3-ethoxyphenyl)-2-propyl-1-(2,5-dimethoxyphenyl)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-(1-methylethyl)-1-(2,5-dimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-chloro-
- 10 1-(2,5-dimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-bromo-
- 1-(2,5-dimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-methyl-
- 1-(2,5-dimethoxyphenyl)propenone
- 15 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-ethyl-
- 1-(2,5-dimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-propyl-
- 1-(2,5-dimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-
- 20 2-(1-methylethyl)-1-(2,5-dimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-chloro-
- 1-(2,5-dimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-bromo-
- 1-(2,5-dimethoxyphenyl)propenone
- 25 E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-methyl-
- 1-(2,5-dimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-ethyl-
- 1-(2,5-dimethoxyphenyl)propenone

- E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-
2-propyl-1-(2,5-dimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-
2-(1-methylethyl)-1-(2,5-dimethoxyphenyl)propenone
- 5 E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-chloro-
1-(2,5-dimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-bromo-
1-(2,5-dimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-methyl-
10 1-(2,5-dimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-ethyl-
1-(2,5-dimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-
2-propyl-1-(2,5-dimethoxyphenyl)propenone
- 15 E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-
2-(1-methylethyl)-1-(2,5-dimethoxyphenyl)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-chloro-1-(2,3,4-tri-
methoxyphenyl)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-bromo-1-(2,3,4-tri-
20 methoxyphenyl)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(2,3,4-tri-
methoxyphenyl)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-ethyl-1-(2,3,4-tri-
methoxyphenyl)propenone
- 25 E-3-(3-Amino-4-methoxyphenyl)-2-propyl-1-(2,3,4-tri-
methoxyphenyl)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-(1-methylethyl)-
1-(2,3,4-trimethoxyphenyl)propenone

- E-3-(3-Amino-4-ethoxyphenyl)-2-chloro-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-bromo-1-(2,3,4-trimethoxyphenyl)propenone
- 5 E-3-(3-Amino-4-ethoxyphenyl)-2-methyl-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-ethyl-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-propyl-1-(2,3,4-trimethoxyphenyl)propenone
- 10 E-3-(3-Amino-4-ethoxyphenyl)-2-(1-methylethyl)-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-chloro-1-(2,3,4-trimethoxyphenyl)propenone
- 15 E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-bromo-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-methyl-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-ethyl-1-(2,3,4-trimethoxyphenyl)propenone
- 20 E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-propyl-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-(1-methylethyl)-1-(2,3,4-trimethoxyphenyl)propenone
- 25 E-3-(4-Amino-3-methoxyphenyl)-2-chloro-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-bromo-1-(2,3,4-trimethoxyphenyl)propenone

- E-3-(4-Amino-3-methoxyphenyl)-2-methyl-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-ethyl-1-(2,3,4-trimethoxyphenyl)propenone
- 5 E-3-(4-Amino-3-methoxyphenyl)-2-propyl-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-(1-methylethyl)-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-chloro-1-(2,3,4-trimethoxyphenyl)propenone
- 10 E-3-(4-Amino-3-ethoxyphenyl)-2-bromo-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-methyl-1-(2,3,4-trimethoxyphenyl)propenone
- 15 E-3-(4-Amino-3-ethoxyphenyl)-2-ethyl-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-propyl-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-(1-methylethyl)-1-(2,3,4-trimethoxyphenyl)propenone
- 20 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-chloro-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-bromo-1-(2,3,4-trimethoxyphenyl)propenone
- 25 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-methyl-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-ethyl-1-(2,3,4-trimethoxyphenyl)propenone

- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-propyl-
1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-(1-methyl-
ethyl)-1-(2,3,4-trimethoxyphenyl)propenone
- 5 E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-chloro-
1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-bromo-
1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-methyl-
10 1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-ethyl-
1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-
2-propyl-1-(2,3,4-trimethoxyphenyl)propenone
- 15 E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-
2-(1-methylethyl)-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-chloro-
1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-bromo-
20 1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-methyl-
1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-ethyl-
1-(2,3,4-trimethoxyphenyl)propenone
- 25 E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-
2-propyl-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-
2-(1-methylethyl)-1-(2,3,4-trimethoxyphenyl)propenone

E-3-(3-Amino-4-methoxyphenyl)-2-chloro-1-(2,3,5-tri-methoxyphenyl)propenone

E-3-(3-Amino-4-methoxyphenyl)-2-bromo-1-(2,3,5-tri-methoxyphenyl)propenone

5 E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(2,3,5-tri-methoxyphenyl)propenone

E-3-(3-Amino-4-methoxyphenyl)-2-ethyl-1-(2,3,5-tri-methoxyphenyl)propenone

E-3-(3-Amino-4-methoxyphenyl)-2-propyl-1-(2,3,5-tri-
10 methoxyphenyl)propenone

E-3-(3-Amino-4-methoxyphenyl)-2-(1-methylethyl)-
1-(2,3,5-trimethoxyphenyl)propenone

E-3-(3-Amino-4-ethoxyphenyl)-2-chloro-1-(2,3,5-tri-methoxyphenyl)propenone

15 E-3-(3-Amino-4-ethoxyphenyl)-2-bromo-1-(2,3,5-tri-methoxyphenyl)propenone

E-3-(3-Amino-4-ethoxyphenyl)-2-methyl-1-(2,3,5-tri-methoxyphenyl)propenone

E-3-(3-Amino-4-ethoxyphenyl)-2-ethyl-1-(2,3,5-tri-
20 methoxyphenyl)propenone

E-3-(3-Amino-4-ethoxyphenyl)-2-propyl-1-(2,3,5-tri-methoxyphenyl)propenone

E-3-(3-Amino-4-ethoxyphenyl)-2-(1-methylethyl)-
1-(2,3,5-trimethoxyphenyl)propenone

25 E-3-[3-Amino-4-(N,N,-dimethylamino)phenyl]-2-chloro-
1-(2,3,5-trimethoxyphenyl)propenone

E-3-[3-Amino-4-(N,N,-dimethylamino)phenyl]-2-bromo-
1-(2,3,5-trimethoxyphenyl)propenone

- E-3-[3-Amino-4-(N,N,-dimethylamino)phenyl]-2-methyl-
1-(2,3,5-trimethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N,-dimethylamino)phenyl]-2-ethyl-
1-(2,3,5-trimethoxyphenyl)propenone
- 5 E-3-[3-Amino-4-(N,N,-dimethylamino)phenyl]-2-propyl-
1-(2,3,5-trimethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N,-dimethylamino)phenyl]-2-(1-methyl-
ethyl)-1-(2,3,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-methoxyphenyl)-2-chloro-1-(2,3,5-tri-
10 methoxyphenyl)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-bromo-1-(2,3,5-tri-
methoxyphenyl)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-methyl-1-(2,3,5-tri-
methoxyphenyl)propenone
- 15 E-3-(4-Amino-3-methoxyphenyl)-2-ethyl-1-(2,3,5-tri-
methoxyphenyl)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-propyl-1-(2,3,5-tri-
methoxyphenyl)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-(1-methylethyl)-
20 1-(2,3,5-trimethoxyphenyl)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-chloro-1-(2,3,5-tri-
methoxyphenyl)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-bromo-1-(2,3,5-tri-
methoxyphenyl)propenone
- 25 E-3-(4-Amino-3-ethoxyphenyl)-2-methyl-1-(2,3,5-tri-
methoxyphenyl)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-ethyl-1-(2,3,5-tri-
methoxyphenyl)propenone

E-3-(4-Amino-3-ethoxyphenyl)-2-propyl-1-(2,3,5-trimethoxyphenyl)propenone

E-3-(4-Amino-3-ethoxyphenyl)-2-(1-methylethyl)-1-(2,3,5-trimethoxyphenyl)propenone

5 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-chloro-1-(2,3,5-trimethoxyphenyl)propenone

E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-bromo-1-(2,3,5-trimethoxyphenyl)propenone

E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-methyl-10 1-(2,3,5-trimethoxyphenyl)propenone

E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-ethyl-1-(2,3,5-trimethoxyphenyl)propenone

E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-propyl-1-(2,3,5-trimethoxyphenyl)propenone

15 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-(1-methylethyl)-1-(2,3,5-trimethoxyphenyl)propenone

E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-chloro-1-(2,3,5-trimethoxyphenyl)propenone

E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-bromo-20 1-(2,3,5-trimethoxyphenyl)propenone

E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-methyl-1-(2,3,5-trimethoxyphenyl)propenone

E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-ethyl-1-(2,3,5-trimethoxyphenyl)propenone

25 E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-2-propyl-1-(2,3,4-trimethoxyphenyl)propenone

E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-2-(1-methylethyl)-1-(2,3,5-trimethoxyphenyl)propenone

- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-chloro-
1-(2,3,5-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-bromo-
1-(2,3,5-trimethoxyphenyl)propenone
- 5 E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-methyl-
1-(2,3,5-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-ethyl-
1-(2,3,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-
10 2-propyl-1-(2,3,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-
2-(1-methylethyl)-1-(2,3,5-trimethoxyphenyl)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-chloro-1-(2,4,5-tri-
methoxyphenyl)propenone
- 15 E-3-(3-Amino-4-methoxyphenyl)-2-bromo-1-(2,4,5-tri-
methoxyphenyl)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(2,4,5-tri-
methoxyphenyl)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-ethyl-1-(2,4,5-tri-
20 methoxyphenyl)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-propyl-1-(2,4,5-tri-
methoxyphenyl)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-(1-methylethyl)-
1-(2,4,5-trimethoxyphenyl)propenone
- 25 E-3-(3-Amino-4-ethoxyphenyl)-2-chloro-1-(2,4,5-tri-
methoxyphenyl)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-bromo-1-(2,4,5-tri-
methoxyphenyl)propenone

- E-3-(3-Amino-4-ethoxyphenyl)-2-methyl-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-ethyl-1-(2,4,5-trimethoxyphenyl)propenone
- 5 E-3-(3-Amino-4-ethoxyphenyl)-2-propyl-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-(1-methylethyl)-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-chloro-10 1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-bromo-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-methyl-1-(2,4,5-trimethoxyphenyl)propenone
- 15 E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-ethyl-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-propyl-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-(1-methyl-20 ethyl)-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-methoxyphenyl]-2-chloro-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-methoxyphenyl]-2-bromo-1-(2,4,5-trimethoxyphenyl)propenone
- 25 E-3-[4-Amino-3-methoxyphenyl]-2-methyl-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-methoxyphenyl]-2-ethyl-1-(2,4,5-trimethoxyphenyl)propenone

- E-3-[4-Amino-3-methoxyphenyl)-2-propyl-1-(2,4,5-tri-methoxyphenyl)propenone
- E-3-[4-Amino-3-methoxyphenyl)-2-(1-methylethyl)-1-(2,4,5-trimethoxyphenyl)propenone
- 5 E-3-[4-Amino-3-ethoxyphenyl)-2-chloro-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-ethoxyphenyl)-2-bromo-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-ethoxyphenyl)-2-methyl-1-(2,4,5-trimethoxyphenyl)propenone
- 10 E-3-[4-Amino-3-ethoxyphenyl)-2-ethyl-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-ethoxyphenyl)-2-propyl-1-(2,4,5-trimethoxyphenyl)propenone
- 15 E-3-[4-Amino-3-ethoxyphenyl)-2-(1-methylethyl)-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-chloro-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-bromo-1-(2,4,5-trimethoxyphenyl)propenone
- 20 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-methyl-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-ethyl-1-(2,4,5-trimethoxyphenyl)propenone
- 25 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-propyl-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-(1-methylethyl)-1-(2,4,5-trimethoxyphenyl)propenone

- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-chloro-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-bromo-1-(2,4,5-trimethoxyphenyl)propenone
- 5 E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-methyl-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-ethyl-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-2-propyl-1-(2,3,4-trimethoxyphenyl)propenone
- 10 E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-2-(1-methylethyl)-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-chloro-1-(2,4,5-trimethoxyphenyl)propenone
- 15 E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-bromo-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-methyl-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-ethyl-1-(2,4,5-trimethoxyphenyl)propenone
- 20 E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-2-propyl-1-(2,4,5-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-2-(1-methylethyl)-1-(2,4,5-trimethoxyphenyl)propenone
- 25 E-3-[3-Amino-4-methoxyphenyl]-2-chloro-1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[3-Amino-4-methoxyphenyl]-2-bromo-1-(2,3,4,5-tetramethoxyphenyl)propenone

- E-3-[3-Amino-4-methoxyphenyl]-2-methyl-1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[3-Amino-4-methoxyphenyl]-2-ethyl-1-(2,3,4,5-tetramethoxyphenyl)propenone
- 5 E-3-[3-Amino-4-methoxyphenyl]-2-propyl-1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[3-Amino-4-methoxyphenyl]-2-(1-methylethyl)-1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[3-Amino-4-ethoxyphenyl]-2-chloro-1-(2,3,4,5-tetramethoxyphenyl)propenone
- 10 E-3-[3-Amino-4-ethoxyphenyl]-2-bromo-1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[3-Amino-4-ethoxyphenyl]-2-methyl-1-(2,3,4,5-tetramethoxyphenyl)propenone
- 15 E-3-[3-Amino-4-ethoxyphenyl]-2-ethyl-1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[3-Amino-4-ethoxyphenyl]-2-propyl-1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[3-Amino-4-ethoxyphenyl]-2-(1-methylethyl)-1-(2,3,4,5-tetramethoxyphenyl)propenone
- 20 E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-chloro-1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-bromo-1-(2,3,4,5-tetramethoxyphenyl)propenone
- 25 E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-methyl-1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-ethyl-1-(2,3,4,5-tetramethoxyphenyl)propenone

- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-propyl-
1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-(1-methyl-
ethyl)-1-(2,3,4,5-tetramethoxyphenyl)propenone
- 5 E-3-(4-Amino-3-methoxyphenyl)-2-chloro-1-(2,3,4,5-
tetramethoxyphenyl)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-bromo-1-(2,3,4,5-
tetramethoxyphenyl)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-methyl-1-(2,3,4,5-
10 tetramethoxyphenyl)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-ethyl-1-(2,3,4,5-
tetramethoxyphenyl)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-propyl-1-(2,3,4,5-
tetramethoxyphenyl)propenone
- 15 E-3-(4-Amino-3-methoxyphenyl)-2-(1-methylethyl)-
1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-chloro-1-(2,3,4,5-
tetramethoxyphenyl)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-bromo-1-(2,3,4,5-
20 tetramethoxyphenyl)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-methyl-1-(2,3,4,5-
tetramethoxyphenyl)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-ethyl-1-(2,3,4,5-
tetramethoxyphenyl)propenone
- 25 E-3-(4-Amino-3-ethoxyphenyl)-2-propyl-1-(2,3,4,5-
tetramethoxyphenyl)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-(1-methylethyl)-
1-(2,3,4,5-tetramethoxyphenyl)propenone

- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-chloro-
1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-bromo-
1-(2,3,4,5-tetramethoxyphenyl)propenone
- 5 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-methyl-
1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-ethyl-
1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-propyl-
10 1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-(1-methyl-
ethyl)-1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-chloro-
1-(2,3,4,5-tetramethoxyphenyl)propenone
- 15 E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-bromo-
1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-methyl-
1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-ethyl-
20 1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-
2-propyl-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-
2-(1-methylethyl)-1-(2,3,4,5-tetramethoxyphenyl)-
25 propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-chloro-
1-(2,3,4,5-tetramethoxyphenyl)propenone

- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-bromo-
1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-methyl-
1-(2,3,4,5-tetramethoxyphenyl)propenone
- 5 E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-ethyl-
1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-
2-propyl-1-(2,3,4,5-tetramethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-
10 2-(1-methylethyl)-1-(2,3,4,5-tetramethoxyphenyl)-
propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-chloro-1-(3-methoxy-
4,5-methylenedioxy)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-bromo-1-(3-methoxy-
15 4,5-methylenedioxy)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(3-methoxy-
4,5-methylenedioxy)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-ethyl-1-(3-methoxy-
4,5-methylenedioxy)propenone
- 20 E-3-(3-Amino-4-methoxyphenyl)-2-propyl-1-(3-methoxy-
4,5-methylenedioxy)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-(1-methylethyl)-
1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-chloro-1-(3-methoxy-
25 4,5-methylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-bromo-1-(3-methoxy-
4,5-methylenedioxy)propenone

- E-3-(3-Amino-4-ethoxyphenyl)-2-methyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-ethyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- 5 E-3-(3-Amino-4-ethoxyphenyl)-2-propyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-(1-methylethyl)-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-chloro-10 1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-bromo-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-methyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- 15 E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-ethyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-propyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-(1-methyl-20 ethyl)-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-chloro-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-bromo-1-(3-methoxy-4,5-methylenedioxy)propenone
- 25 E-3-(4-Amino-3-methoxyphenyl)-2-methyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-ethyl-1-(3-methoxy-4,5-methylenedioxy)propenone

- E-3-(4-Amino-3-methoxyphenyl)-2-propyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-(1-methylethyl)-1-(3-methoxy-4,5-methylenedioxy)propenone
- 5 E-3-(4-Amino-3-ethoxyphenyl)-2-chloro-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-bromo-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-methyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- 10 E-3-(4-Amino-3-ethoxyphenyl)-2-ethyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-propyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- 15 E-3-(4-Amino-3-ethoxyphenyl)-2-(1-methylethyl)-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-chloro-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-bromo-1-(3-methoxy-4,5-methylenedioxy)propenone
- 20 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-methyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-ethyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- 25 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-propyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-(1-methylethyl)-1-(3-methoxy-4,5-methylenedioxy)propenone

- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-chloro-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-bromo-1-(3-methoxy-4,5-methylenedioxy)propenone
- 5 E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-methyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-ethyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-2-propyl-1-(2,3,4-trimethoxyphenyl)propenone
- 10 E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-2-(1-methylethyl)-1-(3-methoxy-4,5-methylene-dioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-chloro-1-(3-methoxy-4,5-methylenedioxy)propenone
- 15 E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-bromo-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-methyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- 20 E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-ethyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-2-propyl-1-(3-methoxy-4,5-methylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-2-(1-methylethyl)-1-(3-methoxy-4,5-methylenedioxy)-propenone
- 25 E-3-(3-Amino-4-methoxyphenyl)-2-chloro-1-(3-methoxy-4,5-ethylenedioxy)propenone

- E-3-(3-Amino-4-methoxyphenyl)-2-bromo-1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(3-methoxy-4,5-ethylenedioxy)propenone
- 5 E-3-(3-Amino-4-methoxyphenyl)-2-ethyl-1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-propyl-1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-(1-methylethyl)-
- 10 1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-chloro-1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-bromo-1-(3-methoxy-4,5-ethylenedioxy)propenone
- 15 E-3-(3-Amino-4-ethoxyphenyl)-2-methyl-1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-ethyl-1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-propyl-1-(3-methoxy-4,5-
- 20 ethylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-(1-methylethyl)-
- 1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-chloro-
- 1-(3-methoxy-4,5-ethylenedioxy)propenone
- 25 E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-bromo-
- 1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-methyl-
- 1-(3-methoxy-4,5-ethylenedioxy)propenone

- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-ethyl-
1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-propyl-
1-(3-methoxy-4,5-ethylenedioxy)propenone
- 5 E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-(1-methyl-
ethyl)-1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-chloro-1-(3-methoxy-
4,5-ethylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-bromo-1-(3-methoxy-4,5-
10 ethylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-methyl-1-(3-methoxy-
4,5-ethylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-ethyl-1-(3-methoxy-4,5-
ethylenedioxy)propenone
- 15 E-3-(4-Amino-3-methoxyphenyl)-2-propyl-1-(3-methoxy-
4,5-ethylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-(1-methylethyl)-
1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-chloro-1-(3-methoxy-4,5-
20 ethylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-bromo-1-(3-methoxy-4,5-
ethylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-methyl-1-(3-methoxy-4,5-
ethylenedioxy)propenone
- 25 E-3-(4-Amino-3-ethoxyphenyl)-2-ethyl-1-(3-methoxy-4,5-
ethylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-propyl-1-(3-methoxy-4,5-
ethylenedioxy)propenone

- E-3-(4-Amino-3-ethoxyphenyl)-2-(1-methylethyl)-
1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-chloro-
1-(3-methoxy-4,5-ethylenedioxy)propenone
- 5 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-bromo-
1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-methyl-
1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-ethyl-
10 1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-propyl-
1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-(1-methyl-
ethyl)-1-(3-methoxy-4,5-ethylenedioxy)propenone
- 15 E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-chloro-
1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-bromo-
1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-methyl-
20 1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-ethyl-
1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-
2-propyl-1-(2,3,4-trimethoxyphenyl)propenone
- 25 E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-
2-(1-methylethyl)-1-(3-methoxy-4,5-ethylenedioxy)-
propenone

- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-chloro-
1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-bromo-
1-(3-methoxy-4,5-ethylenedioxy)propenone
- 5 E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-methyl-
1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-ethyl-
1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-
10 2-propyl-1-(3-methoxy-4,5-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-
2-(1-methylethyl)-1-(3-methoxy-4,5-ethylenedioxy)-
propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-chloro-1-(2-methoxy-
15 3,4-methylenedioxy)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-bromo-1-(2-methoxy-3,4-
methylenedioxy)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(2-methoxy-
3,4-methylenedioxy)propenone
- 20 E-3-(3-Amino-4-methoxyphenyl)-2-ethyl-1-(2-methoxy-3,4-
methylenedioxy)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-propyl-1-(2-methoxy-
3,4-methylenedioxy)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-(1-methylethyl)-
25 1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-chloro-1-(2-methoxy-3,4-
methylenedioxy)propenone

- E-3-(3-Amino-4-ethoxyphenyl)-2-bromo-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-methyl-1-(2-methoxy-3,4-methylenedioxy)propenone
- 5 E-3-(3-Amino-4-ethoxyphenyl)-2-ethyl-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-propyl-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-(1-methylethyl)-
- 10 1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-chloro-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-bromo-1-(2-methoxy-3,4-methylenedioxy)propenone
- 15 E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-methyl-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-ethyl-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-propyl-
- 20 1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-(1-methylethyl)-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-chloro-1-(2-methoxy-3,4-methylenedioxy)propenone
- 25 E-3-(4-Amino-3-methoxyphenyl)-2-bromo-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-methyl-1-(2-methoxy-3,4-methylenedioxy)propenone

- E-3-(4-Amino-3-methoxyphenyl]-2-ethyl-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl]-2-propyl-1-(2-methoxy-3,4-methylenedioxy)propenone
- 5 E-3-(4-Amino-3-methoxyphenyl]-2-(1-methylethyl)-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl]-2-chloro-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl]-2-bromo-1-(2-methoxy-3,4-methylenedioxy)propenone
- 10 E-3-(4-Amino-3-ethoxyphenyl]-2-methyl-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl]-2-ethyl-1-(2-methoxy-3,4-methylenedioxy)propenone
- 15 E-3-(4-Amino-3-ethoxyphenyl]-2-propyl-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl]-2-(1-methylethyl)-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-chloro-1-(2-methoxy-3,4-methylenedioxy)propenone
- 20 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-bromo-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-methyl-1-(2-methoxy-3,4-methylenedioxy)propenone
- 25 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-ethyl-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-propyl-1-(2-methoxy-3,4-methylenedioxy)propenone

- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-(1-methyl-ethyl)-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-chloro-1-(2-methoxy-3,4-methylenedioxy)propenone
- 5 E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-bromo-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-methyl-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-ethyl-10 1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-2-propyl-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-2-(1-methylethyl)-1-(2-methoxy-3,4-methylenedioxy)-15 propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-chloro-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-bromo-1-(2-methoxy-3,4-methylenedioxy)propenone
- 20 E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-methyl-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-ethyl-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-Dimethylamino)-4-ethoxyphenyl]-25 2-propyl-1-(2-methoxy-3,4-methylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-(1-methylethyl)-1-(2-methoxy-3,4-methylene-dioxy)propenone

- E-3-(3-Amino-4-methoxyphenyl)-2-chloro-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-bromo-1-(2-methoxy-3,4-ethylenedioxy)propenone
- 5 E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-ethyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-propyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- 10 E-3-(3-Amino-4-methoxyphenyl)-2-(1-methylethyl)-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-chloro-1-(2-methoxy-3,4-ethylenedioxy)propenone
- 15 E-3-(3-Amino-4-ethoxyphenyl)-2-bromo-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-methyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-ethyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- 20 E-3-(3-Amino-4-ethoxyphenyl)-2-propyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl)-2-(1-methylethyl)-1-(2-methoxy-3,4-ethylenedioxy)propenone
- 25 E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-chloro-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-bromo-1-(2-methoxy-3,4-ethylenedioxy)propenone

- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-methyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-ethyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- 5 E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-propyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-(1-methylethyl)-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-chloro-1-(2-methoxy-3,4-ethylenedioxy)propenone
- 10 E-3-(4-Amino-3-methoxyphenyl)-2-bromo-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-methyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- 15 E-3-(4-Amino-3-methoxyphenyl)-2-ethyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-propyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-(1-methylethyl)-1-(2-methoxy-3,4-ethylenedioxy)propenone
- 20 E-3-(4-Amino-3-ethoxyphenyl)-2-chloro-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-bromo-1-(2-methoxy-3,4-ethylenedioxy)propenone
- 25 E-3-(4-Amino-3-ethoxyphenyl)-2-methyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-ethyl-1-(2-methoxy-3,4-ethylenedioxy)propenone

- E-3-(4-Amino-3-ethoxyphenyl)-2-propyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-(1-methylethyl)-1-(2-methoxy-3,4-ethylenedioxy)propenone
- 5 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-chloro-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-bromo-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-methyl-10 1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-ethyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-propyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- 15 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-(1-methylethyl)-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-chloro-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-bromo-20 1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-methyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-ethyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- 25 E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-2-propyl-1-(2,3,4-trimethoxyphenyl)propenone

- E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-
2-(1-methylethyl)-1-(2-methoxy-3,4-ethylenedioxy)-
propenone
- E-3-[3-(N,N-dimethylamino)-4-ethoxyphenyl]-2-chloro-
5 1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-[3-(N,N-dimethylamino)-4-ethoxyphenyl]-2-bromo-
1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-[3-(N,N-dimethylamino)-4-ethoxyphenyl]-2-methyl-
1-(2-methoxy-3,4-ethylenedioxy)propenone
- 10 E-3-[3-(N,N-dimethylamino)-4-ethoxyphenyl]-2-ethyl-
1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-
2-propyl-1-(2-methoxy-3,4-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-
15 2-(1-methylethyl)-1-(2-methoxy-3,4-ethylenedioxy)-
propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-chloro-1-(2-methoxy-
4,5-methylenedioxy)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-bromo-1-(2-methoxy-4,5-
20 methylenedioxy)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(2-methoxy-
4,5-methylenedioxy)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-ethyl-1-(2-methoxy-4,5-
methylenedioxy)propenone
- 25 E-3-(3-Amino-4-methoxyphenyl)-2-propyl-1-(2-methoxy-
4,5-methylenedioxy)propenone
- E-3-(3-Amino-4-methoxyphenyl)-2-(1-methylethyl)-
1-(2-methoxy-4,5-methylenedioxy)propenone

- E-3-(3-Amino-4-ethoxyphenyl]-2-chloro-1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl]-2-bromo-1-(2-methoxy-4,5-methylenedioxy)propenone
- 5 E-3-(3-Amino-4-ethoxyphenyl]-2-methyl-1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl]-2-ethyl-1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-(3-Amino-4-ethoxyphenyl]-2-propyl-1-(2-methoxy-4,5-methylenedioxy)propenone
- 10 E-3-(3-Amino-4-ethoxyphenyl]-2-(1-methylethyl)-1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-chloro-1-(2-methoxy-4,5-methylenedioxy)propenone
- 15 E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-bromo-1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-methyl-1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-ethyl-1-(2-methoxy-4,5-methylenedioxy)propenone
- 20 E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-propyl-1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-(1-methylethyl)-1-(2-methoxy-4,5-methylenedioxy)propenone
- 25 E-3-(4-Amino-3-methoxyphenyl)-2-chloro-1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-bromo-1-(2-methoxy-4,5-methylenedioxy)propenone

- E-3-(4-Amino-3-methoxyphenyl)-2-methyl-1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-ethyl-1-(2-methoxy-4,5-methylenedioxy)propenone
- 5 E-3-(4-Amino-3-methoxyphenyl)-2-propyl-1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-(1-methylethyl)-1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-chloro-1-(2-methoxy-4,5-methylenedioxy)propenone
- 10 E-3-(4-Amino-3-ethoxyphenyl)-2-bromo-1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-methyl-1-(2-methoxy-4,5-methylenedioxy)propenone
- 15 E-3-(4-Amino-3-ethoxyphenyl)-2-ethyl-1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-propyl-1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-(1-methylethyl)-1-(2-methoxy-4,5-methylenedioxy)propenone
- 20 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-chloro-1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-bromo-1-(2-methoxy-4,5-methylenedioxy)propenone
- 25 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-methyl-1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-ethyl-1-(2-methoxy-4,5-methylenedioxy)propenone

- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-propyl-
1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-(1-methyl-
ethyl)-1-(2-methoxy-4,5-methylenedioxy)propenone
- 5 E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-chloro-
1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-bromo-
1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-methyl-
10 1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-ethyl-
1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-2-
propyl-1-(2,3,4-trimethoxyphenyl)propenone
- 15 E-3-[4-Amino-3-(N,N-dimethylamino)-4-methoxyphenyl]-2-
(1-methylethyl)-1-(2-methoxy-4,5-methylenedioxy)-
propenone
- E-3-[3-(N,N-dimethylamino)-4-ethoxyphenyl]-2-chloro-
1-(2-methoxy-4,5-methylenedioxy)propenone
- 20 E-3-[3-(N,N-dimethylamino)-4-ethoxyphenyl]-2-bromo-
1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-[3-(N,N-dimethylamino)-4-ethoxyphenyl]-2-methyl-
1-(2-methoxy-4,5-methylenedioxy)propenone
- E-3-[3-(N,N-dimethylamino)-4-ethoxyphenyl]-2-ethyl-1-
25 (2-methoxy-4,5-methylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-2-
propyl-1-(2-methoxy-4,5-methylenedioxy)propenone

E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-2-(1-methylethyl)-1-(2-methoxy-4,5-methylenedioxy)-propenone

E-3-(3-Amino-4-methoxyphenyl]-2-chloro-1-(2-methoxy-4,5-ethylenedioxy)propenone

E-3-(3-Amino-4-methoxyphenyl]-2-bromo-1-(2-methoxy-4,5-ethylenedioxy)propenone

E-3-(3-Amino-4-methoxyphenyl]-2-methyl-1-(2-methoxy-4,5-ethylenedioxy)propenone

10 E-3-(3-Amino-4-methoxyphenyl]-2-ethyl-1-(2-methoxy-4,5-ethylenedioxy)propenone

E-3-(3-Amino-4-methoxyphenyl]-2-propyl-1-(2-methoxy-4,5-ethylenedioxy)propenone

E-3-(3-Amino-4-methoxyphenyl]-2-(1-methylethyl)-1-(2-methoxy-4,5-ethylenedioxy)propenone

E-3-(3-Amino-4-ethoxyphenyl]-2-chloro-1-(2-methoxy-4,5-ethylenedioxy)propenone

E-3-(3-Amino-4-ethoxyphenyl]-2-bromo-1-(2-methoxy-4,5-ethylenedioxy)propenone

20 E-3-(3-Amino-4-ethoxyphenyl]-2-methyl-1-(2-methoxy-4,5-ethylenedioxy)propenone

E-3-(3-Amino-4-ethoxyphenyl]-2-ethyl-1-(2-methoxy-4,5-ethylenedioxy)propenone

E-3-(3-Amino-4-ethoxyphenyl]-2-propyl-1-(2-methoxy-4,5-ethylenedioxy)propenone

E-3-(3-Amino-4-ethoxyphenyl]-2-(1-methylethyl)-1-(2-methoxy-4,5-ethylenedioxy)propenone

- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-chloro-
1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-bromo-
1-(2-methoxy-4,5-ethylenedioxy)propenone
- 5 E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-methyl-
1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-ethyl-
1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-propyl-
10 1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-[3-Amino-4-(N,N-dimethylamino)phenyl]-2-(1-methyl-
ethyl)-1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-chloro-1-(2-methoxy-
4,5-ethylenedioxy)propenone
- 15 E-3-(4-Amino-3-methoxyphenyl)-2-bromo-1-(2-methoxy-
4,5-ethylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-methyl-1-(2-methoxy-
4,5-ethylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-ethyl-1-(2-methoxy-
20 4,5-ethylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-propyl-1-(2-methoxy-
4,5-ethylenedioxy)propenone
- E-3-(4-Amino-3-methoxyphenyl)-2-(1-methylethyl)-
1-(2-methoxy-4,5-ethylenedioxy)propenone
- 25 E-3-(4-Amino-3-ethoxyphenyl)-2-chloro-1-(2-methoxy-
4,5-ethylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-bromo-1-(2-methoxy-
4,5-ethylenedioxy)propenone

- E-3-(4-Amino-3-ethoxyphenyl)-2-methyl-1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-ethyl-1-(2-methoxy-4,5-ethylenedioxy)propenone
- 5 E-3-(4-Amino-3-ethoxyphenyl)-2-propyl-1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-(4-Amino-3-ethoxyphenyl)-2-(1-methylethyl)-1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-chloro-10 1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-bromo-1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-methyl-1-(2-methoxy-4,5-ethylenedioxy)propenone
- 15 E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-ethyl-1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-propyl-1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)phenyl]-2-(1-methyl-20 ethyl)-1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-chloro-1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-bromo-1-(2-methoxy-4,5-ethylenedioxy)propenone
- 25 E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-methyl-1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-methoxyphenyl]-2-ethyl-1-(2-methoxy-4,5-ethylenedioxy)propenone

- E-3-[4-Amino-3-(N,N-Dimethylamino)-4-methoxyphenyl]-
2-propyl-1-(2,3,4-trimethoxyphenyl)propenone
- E-3-[4-Amino-3-(N,N-Dimethylamino)-4-methoxyphenyl]-
2-(1-methylethyl)-1-(2-methoxy-4,5-ethylene-
5 dioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-chloro-
1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-bromo-
1-(2-methoxy-4,5-ethylenedioxy)propenone
- 10 E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-methyl-
1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-[3-(N,N-Dimethylamino)-4-ethoxyphenyl]-2-ethyl-
1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-
15 2-propyl-1-(2-methoxy-4,5-ethylenedioxy)propenone
- E-3-[4-Amino-3-(N,N-dimethylamino)-4-ethoxyphenyl]-
2-(1-methylethyl)-1-(2-methoxy-4,5-ethylene-
dioxy)propenone
- 2-Aminoacetic acid {2-methoxy-5-[2-methyl-3-oxo-3-
20 (3,4,5-trimethoxyphenyl)propenyl]phenyl}amide
- 2-Aminopropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-
(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide
- 2-Amino-5-guanidinopentanoic acid {2-methoxy-5-[2-
methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]-
25 phenyl}amide
- 2-Aminosuccinamic acid {2-methoxy-5-[2-methyl-3-oxo-3-
(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide

- 2-Aminosuccinic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide
- 2-Amino-3-mercaptopropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]-
- 5 phenyl}amide
- 2-Aminoglutamic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide
- 2-Amino-3-methylpentanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide
- 10 2,6-Diaminocaproic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide
- 2-Amino-4-methylthiobutanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]-
- phenyl}amide
- 15 2-Aminocaproic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide
- 2-Amino-3-phenylpropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide
- Pyrrolidine-2-carboxylic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide
- 20 2-Amino-3-hydroxypropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide
- 2-Amino-3-hydroxybutanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide
- 25 2-Amino-3-(1-*H*-indol-5-yl)propanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]-
- phenyl}amide

- 2-Amino-3-(4-hydroxyphenyl)propanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]-phenyl}amide
- 2-Amino-2-methylbutanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide
- 5 2-(N-methylamino)acetic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide
- 2-Amino-5-[3-(1-nitroguanidino)]pentanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)-propenyl]phenyl}amide
- 10 1-Methylpyrrolidine-2-carboxylic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]-phenyl}amide
- E-2-Methyl-3-(1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone
- 15 E-2-Methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone;
- E-2-Methyl-3-(2,3-dihydro-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone
- 20 E-2-Methyl-3-(1-methyl-2,3-dihydro-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone;
- E-2-Methyl-3-(1-hydroxymethyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone
- E-2-Methyl-3-(1-hydroxyethyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone
- 25 E-2-Methyl-3-(1-methoxymethyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone

- E-2-Methyl-3-(1-(*N,N*-dimethylaminoethyl)-1-*H*-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone
- E-2-Methyl-3-(1-(*N,N*-dimethylaminopropyl)-1-*H*-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone
- 5 E-2-Methyl-3-[1-(2-pyrrolidinoethyl)-1-*H*-indol-5-yl]-1-(3,4,5-trimethoxyphenyl)propenone
- 2-Aminoacetic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}amide
- 2-Aminopropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}amide
- 10 (2,5-dimethoxyphenyl)propenyl]phenyl}amide
- 2-Amino-5-guanidinopentanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}-amide
- 2-Aminosuccinamic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}amide
- 15 (2,5-dimethoxyphenyl)propenyl]phenyl}amide
- 2-Aminosuccinic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}amide
- 2-Amino-3-mercaptopropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}-amide
- 20 amide
- 2-Aminoglutamic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}amide
- 2-Amino-3-methylpentanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}amide
- 25 2,6-Diaminocaproic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}amide

- 2-Amino-4-methylthiobutanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}-amide
- 2-Aminocaproic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}amide
- 5 2-Amino-3-phenylpropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}amide
- Pyrrolidine-2-carboxylic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}amide
- 10 2-Amino-3-hydroxypropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}amide
- 2-Amino-3-hydroxybutanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}amide
- 2-Amino-3-(1-*H*-indol-5-yl)propanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}amide
- 15 2-Amino-3-(4-hydroxyphenyl)propanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}amide
- 2-Amino-2-methylbutanoic-{2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}amide
- 20 2-(*N*-Methylamino)acetic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}amide
- 2-Amino-5-[3-(1-nitroguanidino)-]-pentanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}amide
- 25

1-methylpyrrolidine-2-carboxylic acid {2-methoxy-5-[2-methyl-3-oxo-3-(2,5-dimethoxyphenyl)propenyl]phenyl}-amide

E-2-Methyl-3-(1-H-indol-5-yl)-1-(2,5-dimethoxyphenyl)-
5 propenone

E-2-Methyl-3-(1-methyl-1-H-indol-5-yl)-1-(2,5-dimethoxyphenyl)propenone;

E-2-Methyl-3-(2,3-dihydro-1-H-indol-5-yl)-1-(2,5-dimethoxyphenyl)propenone

10 E-2-Methyl-3-(1-methyl-2,3-dihydro-1-H-indol-5-yl)-1-(2,5-dimethoxyphenyl)propenone;

E-2-Methyl-3-(1-hydroxymethyl-1-H-indol-5-yl)-1-(2,5-dimethoxyphenyl)propenone

E-2-Methyl-3-(1-hydroxyethyl-1-H-indol-5-yl)-1-(2,5-dimethoxyphenyl)propenone
15

E-2-Methyl-3-(1-methoxymethyl-1-H-indol-5-yl)-1-(2,5-dimethoxyphenyl)propenone

E-2-Methyl-3-(1-(*N,N*-dimethylaminoethyl)-1-H-indol-5-yl)-1-(2,5-dimethoxyphenyl)propenone

20 E-2-Methyl-3-(1-(*N,N*-dimethylaminopropyl)-1-H-indol-5-yl)-1-(2,5-dimethoxyphenyl)propenone

E-2-Methyl-3-[1-(2-pyrrolidinoethyl)-1-H-indol-5-yl]-1-(2,5-dimethoxyphenyl)propenone

2-Aminoacetic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-ethoxy-4,5-methylenedioxyphenyl)propenyl]phenyl}amide
25

2-Aminopropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)propenyl]phenyl}-amide

2-Amino-5-guanidinopentanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)-propenyl]phenyl}amide

2-Aminosuccinamic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)propenyl]phenyl}-amide

2-Aminosuccinic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)propenyl]phenyl}amide

2-Amino-3-mercaptopropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)-propenyl]phenyl}amide

2-Aminoglutamic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)-propenyl]phenyl}amide

2-Amino-3-methylpentanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)propenyl]phenyl}amide

2,6-Diaminocaproic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)propenyl]phenyl}-amide

2-Amino-4-methylthiobutanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)-propenyl]phenyl}amide

2-Aminocaproic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)propenyl]phenyl}amide

2-Amino-3-phenylpropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)propenyl]phenyl}amide

Pyrrolidine-2-carboxylic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)propenyl]-phenyl}amide

2-Amino-3-hydroxypropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)propenyl]-phenyl}amide

2-Amino-3-hydroxybutanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)propenyl]-phenyl}amide

10 2-Amino-3-(1-*H*-indol-5-yl)-propanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)propenyl]phenyl}amide

2-Amino-3-(4-hydroxyphenyl)propanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)propenyl]phenyl}amide

2-Amino-2-methylbutanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)propenyl]-phenyl}amide

2-(*N*-Methylamino)acetic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)propenyl]-phenyl}amide

2-Amino-5-[3-(1-nitroguanidino)]pentanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)propenyl]phenyl}amide

25 1-Methylpyrrolidine-2-carboxylic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3-methoxy-4,5-methylenedioxyphenyl)propenyl]phenyl}amide

E-2-Methyl-3-(1-H-indol-5-yl)-1-(3-methoxy-4,5-methylenedioxyphenyl)propenone

E-2-Methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3-methoxy-4,5-methylenedioxyphenyl)propenone;

5 E-2-Methyl-3-(2,3-dihydro-1-H-indol-5-yl)-1-(3-methoxy-4,5-methylenedioxyphenyl)propenone

E-2-Methyl-3-(1-methyl-2,3-dihydro-1-H-indol-5-yl)-1-(3-methoxy-4,5-methylenedioxyphenyl)propenone;

E-2-Methyl-3-(1-hydroxymethyl-1-H-indol-5-yl)-1-(3-methoxy-4,5-methylenedioxyphenyl)propenone

E-2-Methyl-3-(1-hydroxyethyl-1-H-indol-5-yl)-1-(3-methoxy-4,5-methylenedioxyphenyl)propenone

E-2-Methyl-3-(1-methoxymethyl-1-H-indol-5-yl)-1-(3-methoxy-4,5-methylenedioxyphenyl)propenone

15 E-2-Methyl-3-(1-(*N,N*-dimethylaminoethyl)-1-H-indol-5-yl)-1-(3-methoxy-4,5-methylenedioxyphenyl)propenone

E-2-Methyl-3-(1-(*N,N*-dimethylaminopropyl)-1-H-indol-5-yl)-1-(3-methoxy-4,5-methylenedioxyphenyl)propenone

E-2-Methyl-3-[1-(2-pyrrolidinoethyl)-1-H-indol-5-yl]-1-(3-methoxy-4,5-methylenedioxyphenyl)propenone

Products according to the invention will preferably be chosen from:

E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone;

25 E-3-(4-Amino-3-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone;

E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(2,5-dimethoxyphenyl)propenone hydrochloride;

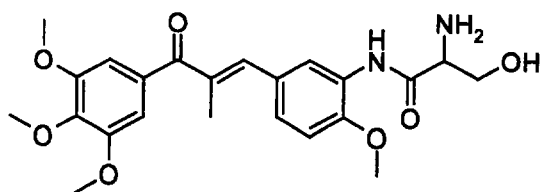
- E-3-(3-Amino-4-methoxyphenyl)-2-bromo-1-(3,4,5-trimethoxyphenyl)propenone;
- E-2-Methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone;
- 5 E-2-Methyl-3-(1-methyl-2,3-dihydro-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone;
- E-2-Methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenoneoxime;
- E-2-Methyl-3-[1-(2-dimethylaminoethyl)-1-H-indol-5-yl]-
- 10 1-(3,4,5-trimethoxyphenyl)propenone hydrochloride;
- E-2-Methyl-3-(1-hydroxymethyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone;
- E-2-Methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3-methoxy-4,5-methylenedioxyphenyl)propenone;
- 15 E-2-Methyl-3-[1-(2-dimethylaminoethyl)-1-H-indol-5-yl]-1-(3-methoxy-4,5-methylenedioxyphenyl)propenone;
- (S)-2,6-Diaminohexanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide dihydrochloride;
- 20 2-Amino-5-[3-(1-nitroguanidino)]pentanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide hydrochloride;
- Aminoacetic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide hydrochloride
- 25 (S)-2-Amino-3-hydroxypropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]-phenyl}amide hydrochloride

1-Methylpyrrolidine-2-carboxylic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]-phenyl}amide hydrochloride.

The products in accordance with the invention
 5 may be present in free or salified form, when they
 comprise at least one salifiable substituent. The
 products comprising at least one salifiable substituent
 will preferably be salified. Examples of suitable
 salifiable substituents are amino, alkylamino,
 10 dialkylamino, imino, guanidino, hydrazino, imidazolino,
 pyrido, pyrimido and pyridazino substituents.

A preferred salified form is a hydrochloride.

A preferred salified form of a product in
 accordance with the invention that has particularly
 15 advantageous properties is (S)-2-amino-3-
 hydroxypropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-
 (3,4,5-trimethoxyphenyl)propenyl]phenyl}amide
 hydrochloride, having the following structure:



.hydrochloride

20 A product in accordance with the invention
 may be used for the manufacture of a medicinal product
 that is useful for treating a pathological condition,
 in particular a cancer.

The present invention also relates to
 25 therapeutic compositions containing a compound

according to the invention, in combination with an excipient that is pharmaceutically acceptable according to the chosen mode of administration. The pharmaceutical composition may be in solid or liquid
5 form or in the form of liposomes.

Among the solid compositions that may be mentioned are powders, gel capsules and tablets. Among the oral forms that may also be included are solid forms protected against the acidic medium of the
10 stomach. The supports used for the solid forms consist especially of mineral supports, for instance phosphates or carbonates, or of organic supports, for instance lactose, celluloses, starch or polymers. The liquid forms consist of solutions, suspensions or dispersions.
15 They contain as dispersive support either water or an organic solvent (ethanol, NMP or the like) or mixtures of surfactants and of solvents or complexing agents and solvents.

The liquid forms will preferably be
20 injectable and, as a result, will have a formulation that is acceptable for such a use.

Administration routes by injection that are acceptable include the intravenous, intraperitoneal, intramuscular and subcutaneous routes, the intravenous
25 route being preferred.

The administered dose of the compounds of the invention will be adapted by the doctor as a function

of the route of administration for the patient and the patient's condition.

The compounds of the present invention may be administered alone or as a mixture with other
5 anticancer agents. Among the possible combinations that may be mentioned are:

- * alkylating agents and especially
cyclophosphamide, melphalan, ifosfamide,
chlorambucil, busulfan, thiotepa, prednimustine,
10 carmustine, lomustine, semustine,
streptozotocin, decarbazine, temozolomide,
procarbazine and hexamethylmelamine
- * platinum derivatives such as, especially,
cisplatin, carboplatin or oxaliplatin
- 15 * antibiotic agents such as, in particular,
bleomycin, mitomycin or dactinomycin
- * antimicrotubule agents such as, in particular,
vinblastine, vincristine, vindesine, vinorelbin
and taxoids (paclitaxel and docetaxel)
- 20 * anthracyclines, such as, in particular,
doxorubicin, daunorubicin, idarubicin,
epirubicin, mitoxantrone and losoxantrone
- * group I and II topoisomerases such as etoposide,
teniposide, amsacrine, irinotecan, topotecan and
25 tomudex
- * fluoropyrimidines such as 5-fluorouracil, UFT
and floxuridine

- * cytidine analogs such as 5-azacytidine,
cytarabine, gemcitabine, 6-mercaptopurine and
6-thioguanine
- * adenosine analogs such as pentostatin,
5 cytarabine or fludarabine phosphate
- * methotrexate and folinic acid
- * various enzymes and compounds such as
L-asparaginase, hydroxyurea, trans-retinoic
acid, suramine, dexrazoxane, amifostine,
10 herceptin and also estrogenic and androgenic
hormones
- * antivascular agents such as combretastatine
derivatives or colchicine derivatives and
prodrugs thereof.

15 It is also possible to combine the compounds
of the present invention with a radiotherapy. These
treatments may be administered simultaneously,
separately or sequentially. The treatment will be
adapted by the doctor as a function of the patient to
20 be treated.

A product in accordance with the invention
may promote the disintegration of lumps of cells
originating from a vascular tissue. More particularly,
the products of the present invention will be used in
25 their first therapeutic application to inhibit the
growth of cancer cells and at the same time the
destruction of existing vessels. The inhibition of

vascularization is determined by a cell detachment test as described below.

Test for determining the inhibition of vascularization

A test to determine the detachment of
5 endothelial cells was established in order to select
the products on the basis of their "in vitro" activity.
This test for determining the endothelial cell
detachment is characterized in that the endothelial
cells, inoculated in plates which are coated at the
10 bottom with a binder preferably chosen from gelatin,
fibronectin or vitronectin, after culturing, are
supplemented with a medium containing the test
compound, and the cells are the labeled with a
fluorescent substance, the cells which become detached
15 are removed by washing and the fluorescence of the
remaining cells is counted in a fluorimeter.

This test consists in measuring the detachment of
endothelial cells cultured on substrates based on a
20 binder preferably chosen from fibronectin, vitronectin
and gelatin. Preferably, one day after inoculating the
cells in plates containing 96 wells, for example, the
culture medium is replaced with a medium containing the
test compound in the absence of serum. The same
25 preparation is prepared six times at three different
concentrations (0.1, 0.3 and 0.6 μM) and the control
without addition of antivasular product is prepared
six times. After treatment for two hours with the test

substance, the cells are labeled with calcein-AM (1.6 $\mu\text{g/ml}$) in a culture medium supplemented with 0.1% BSA. The cells which become detached are removed by washing with the culture medium containing 0.1% bovine serum albumin; 100 μl of medium are added to each well. The fluorescence of the remaining cells is counted in a fluorimeter. The data obtained are expressed relative to the control (untreated cells).

The assessment of the detachment of the endothelial cells *in vitro* is determined in the following way. HDMEC cells (Human Dermal Microvascular Endothelial Cells, Promocell, c-122102) are cultured in an ECGM-MV medium containing 5% fetal calf serum, growth factors (EGF 10 ng/ml, hydrocortisone 1 $\mu\text{g/ml}$, 0.4% growth supplement with heparin) and antibiotics (amphotericin 50 ng/ml, gentamicin 50 $\mu\text{g/ml}$). For the detachment test, the HDMECs are inoculated at a rate of 5 000 cells in clear-bottomed 96-well plates (Costar) precoated with fibronectin (10 $\mu\text{g/ml}$) or vitronectin (1 $\mu\text{g/ml}$) or gelatin. Twenty-four hours later, the culture medium is replaced with 0.1% BSA ECGM-MV medium containing the indicated products. The test concentrations are 0.1-0.3 and 1 μM for each product. After treatment for two hours, the cells are labeled for 1 hour with calcein (1.6 $\mu\text{g/ml}$, Molecular Probes) in 0.1% BSA ECGM-MV medium. The detached cells are then removed by washing with 0.1% BSA ECGM-MV medium; 100 μl of medium are added to each well. The fluorescence of

the cells which remain attached to the substratum of the well is counted using a fluorimeter, Spectrafluor Plus (Tecan, excitation at 485 nm, and emission at 535 nm). The data are the average of six different
5 samples and are expressed as a percentage of the control (untreated cells).

A cell detachment effect of greater than or equal to 15% is considered as significant.

A product in accordance with the invention
10 may be useful for inhibiting tubulin polymerization in vitro.

Assessment of the inhibition of tubulin polymerization

Tubulin is purified from pig brains according to the published methods (Shelanski et al., 1973, Proc.
15 Natl, Acad. Sci. USA, **70**, 765-768. Weingarten et al., 1975, Proc. Natl, Acad. Sci. USA, **72**, 1858-1862).

Briefly, the brains are ground and centrifuged in an extraction buffer. The tubulin, contained in the extract supernatant, is subjected to two successive
20 cycles of polymerization at 37°C and depolymerization at 4°C, before being separated from the MAPs (Microtubule Associated Proteins) by chromatography on a phosphocellulose P11 column (Whatman). The tubulin thus isolated is more than 95% pure. It is stored in a
25 buffer known as RB/2 30% glycerol, the composition of which is MES-NaOH [2-(N-morpholino)ethanesulfonic acid] 50 mM, pH 6.8; MgCl₂ 0.25 mM; EGTA 0.5 mM; 30% glycerol (v/v), GTP (guanosine 5'-triphosphate) 0.2 mM.

The polymerization of the tubulin into microtubules is monitored by turbidimetry as follows; the tubulin is adjusted to a concentration of 10 μM (1 mg/ml) in the RB/2 30% glycerol buffer, to which is
5 added 1mM GTP and 6mM MgCl_2 . The polymerization is initiated by increasing the temperature from 6°C to 37°C in a cuvette with a 1 cm optical pathlength, placed in a Uvikon 931 spectrophotometer (Kontron) equipped with a thermostatically-regulated cuvette
10 holder. The increase in the turbidity of the solution is monitored at 350 nm.

The products are dissolved at 10 mM in DMSO and added at variable concentrations (0.5 to 10 μM) to the tubulin solution before polymerization. The IC_{50}
15 value is defined as the concentration of product which inhibits 50% of the rate of polymerization. A product whose IC_{50} value is less than or equal to 3 μM is considered as very active.

Assesment of the inhibition of proliferation of HeLa 20 cells

The proliferation of HeLa cells is assessed by measuring the incorporation of [^{14}C]-thymidine in the following way. The HeLa cells (epithelial tumor cells of human origin) are cultured in a DMEM medium (Gibco)
25 which contains 10% fetal calf serum and antibiotics (1% penicillin, 1% streptomycin). To carry out the proliferation test, the cells are inoculated into 96-well cytostar microplates (Amersham), at a rate of

5 000 cells per well. [^{14}C]-thymidine (0.1 $\mu\text{Ci}/\text{well}$) and the products to be assessed are then added. Variable concentrations of products up to 10 μM are used; the DMSO (solvent used to dissolve the products) should not
5 exceed 0.5% in the medium. After incubation for 48 hours at 37°C, the radioactivity incorporated into the cells is measured by counting the plate in a TRI-LUX counter (Wallac). The IC_{50} value is defined as the concentration of product which reduces the
10 radioactivity by 50% relative to an untreated control. A product whose IC_{50} value is less than 1 μM is considered as cytotoxic.

Assessment of the detachment effect on HDMEC
endothelial cells

15 The assessment of the detachment of the endothelial cells *in vitro* is determined in the following way. HDMEC cells (Human Dermal Microvascular Endothelial Cells, Promocell, c-122102) are cultured in an ECGM-MV medium containing 5% fetal calf serum,
20 growth factors (EGF 10 ng/ml, hydrocortisone 1 $\mu\text{g}/\text{ml}$, 0.4% growth supplement with heparin) and antibiotics (amphotericine 50 ng/ml, gentamicin 50 $\mu\text{g}/\text{ml}$). For the detachment test, the HDMECs are inoculated at a rate of 5 000 cells in clear-bottomed 96-well plates (Costar)
25 precoated with fibronectin (10 $\mu\text{g}/\text{ml}$) or vitronectin (1 $\mu\text{g}/\text{ml}$) or gelatin. Twenty-four hours later, the culture medium is replaced with 0.1% BSA ECGM-MV medium containing the indicated products. The test

concentrations are 0.1-0.3 and 1 μ M for each product. After treatment for two hours, the cells are labeled for 1 hour with calcein (1.6 μ g/ml, Molecular Probes) in 0.1% BSA ECGM-MV medium. The detached cells are then
5 removed by washing with 0.1% BSA ECGM-MV medium; 100 μ l of medium are added to each well. The fluorescence of the cells which remain attached to the substratum of the well is counted using a fluorimeter, Spectrafluor Plus (Tecan, excitation at 485 nm, and emission at
10 535 nm). The data are the average of six different samples and are expressed as a percentage of the control (untreated cells).

A cell detachment effect of greater than or equal to 15% is considered as significant.

15 Assessment of the tumor necrosis in vivo

Mice are bred by IFFA-CREDO (Domaine des Oncins, 69210 L'Arbresle, France) from a race obtained by Jackson Laboratories, Bar Harbor, ME, USA, or by Charles River France (76410 St Aubin les Elbeuf,
20 France) from a race obtained by Charles River, USA. The mice initially weigh more than 18 g at the start of the test. They have free access to food (UAR reference 113, Villemoisson, 91160 Epinay sur Orge, France) and water.

The tumors used are currently transplanted in
25 our laboratories. All these tumors are at the Frederick Cancer Research Facility (Frederick, MD, USA) in the frozen tumor deposit of the National Cancer Institute

(NCI) or at the American Type Culture Collection (ATCC, Rockville, MD, USA).

The tumor transplantation techniques, the chemotherapy and the data analysis are presented in
5 detail (Corbett *et al.* 1982a; Corbett *et al.*, 1982b).

To summarize, the animals required for an experiment are assembled and implanted bilaterally on day 0 (zero).

The growth of the solid tumors develops
10 freely up to the desired size. The mice are then treated by intravenous injection of a test compound in solution.

The sampling of tumors is usually (but not necessarily) carried out 24 hours after the treatment.

15 The mice are killed by cerebral dislocation. The implanted tumors, along with the skin covering them and the neighboring tissues, are collected and stored in 10% formaldehyde (v/v) (Carlo Erba, Val de Reuil, France).

20 The samples are then treated, sectioned, stained with hematoxylin, eosin and saffron yellow, and are then examined macroscopically. The tumor necrosis (necrosis $\pm$ degeneration) is assessed microscopically using a scale of magnitude from 0 to 5:

25 0 = absence of necrosis;

1 = minimal, <5%;

2 = small, 5-25%;

3 = moderate, 25-50%;

4 = pronounced, 50-75%;

5 = large, >75%.

The values assigned to the tumor necrosis 24 hours after administration of the test compound correspond solely to a necrosis dependent on the product which may be differentiated with certainty from any existing necrosis arising from the experiment.

The necrosis due to the experiment was assessed on an untreated control.

10 The tumor model is a C51 murine adenocarcinoma. This colon tumor is a grade III mucous colon adenoma. It is maintained by serial subcutaneous passages every 18 days in female BALB/c mice. The experiments were carried out on female BALB/c mice.

15 Results

Under the conditions as described, the following results were obtained for the examples described below:

- Example 1: selected dose 24.5 mg/kg/inj. - grade 5 necrosis
- Example 2: selected dose 50 mg/kg/inj. - grade 5 necrosis

References

- CORBETT, T.H., LEOPOLD, W.R., DYKES D.J.,
25 ROBERTS, B.J., GRISWOLD, D.P., Jr and SCHABEL, F.M., Jr., Toxicity and anticancer activity of new triazine antifolate (NSC 127755). Cancer Res., 1982a, **42**, 1707-1715.

CORBETT, T.H., ROBERTS, B.J., TRADER, M.W.,
 LASTER, W.R., Jr., GRISWOLD, D.P., Jr and
 SCHABEL, F.M., Jr., Response of transplantable tumors
 of mice to anthracenedione derivatives alone and in
 5 combination with clinically useful agents. Cancer
 Treat. Rep., 1982b, **66**, 1187-1200.

Definitions

"Halogen" is an element chosen from F, Cl, Br and I.

"C₁-C₇ linear alkyl" is a substituent chosen from
 10 methyl, ethyl, n-propyl, n-butyl, n-pentyl, n-hexyl and
 n-heptyl.

"C₁-C₇ branched alkyl" is a substituent chosen from
 1-methylethyl, 1-methylpropyl, 2-methylpropyl,
 1,1-dimethylethyl, 1-methylbutyl, 2-methylbutyl,
 15 3-methylbutyl, 1,1-dimethylpropyl, 1,2-dimethylpropyl,
 2,2-dimethylpropyl, 1-methylpentyl, 2-methylpentyl,
 3-methylpentyl, 4-methylpentyl, 1,1-dimethylbutyl,
 1,2-dimethylbutyl, 1,3-dimethylbutyl,
 2,2-dimethylbutyl, 2,3-dimethylbutyl,
 20 3,3-dimethylbutyl, 1,1,2-trimethylpropyl,
 1,2,2-trimethylpropyl, 1-ethyl-1-methylpropyl, 1-ethyl-
 2-methylpropyl, 1-ethylbutyl, 2-ethylbutyl,
 1-methylhexyl, 2-methylhexyl, 3-methylhexyl,
 4-methylhexyl, 5-methylhexyl, 1,1-dimethylpentyl,
 25 1,2-dimethylpentyl, 1,3-dimethylpentyl,
 1,4-dimethylpentyl, 2,2-dimethylpentyl,
 2,3-dimethylpentyl, 2,4-dimethylpentyl,
 3,3-dimethylpentyl, 3,4-dimethylpentyl,

- 4,4-dimethylpentyl, 1,1,2-trimethylbutyl, 1,1,3-trimethylbutyl, 1,2,2-trimethylbutyl, 1,2,3-trimethylbutyl, 1,3,3-trimethylbutyl, 2,2,3-trimethylbutyl, 2,3,3-trimethylbutyl,
- 5 1,1,2,2-tetramethylpropyl, 1-ethylpentyl, 2-ethylpentyl, 3-ethylpentyl, 1-ethyl-1-methylbutyl, 1-ethyl-2-methylbutyl, 1-ethyl-3-methylbutyl, 2-ethyl-1-methylbutyl, 2-ethyl-2-methylbutyl, 2-ethyl-3-methylbutyl, 1-propylbutyl, 1-(1-methylethyl)butyl,
- 10 1-(1-methylethyl)-2-methylpropyl.

"Cycloalkyl" may be a substituent chosen from cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl and bicyclo[2.2.1]heptyl.

- "Aryl" may be a substituent chosen from phenyl,
- 15 naphthyl, pyridyl, quinoleyl, isoquinoleyl, pyrimidyl, piperazinyl, triazinyl, carbazolyl, imidazolyl, thiazolyl, oxazolyl, benzimidazolyl, benzothiazolyl, benzoxazolyl, triazolyl, tetrazolyl, benzotriazolyl, thienyl, furyl, pyreryl, benzothienyl, benzofuryl and
- 20 indolyl.

"Aralkyl" is an alkyl substituent, itself substituted with an aryl group as defined above. A benzyl group is an example of an aralkyl substituent.

- The term "substituted" that is especially present in
- 25 the expressions "substituted C₁-C₇ linear alkyl", "substituted C₁-C₇ branched alkyl", "substituted cycloalkyl" and "substituted aralkyl" necessarily relates to a substituent other than H, which may be chosen from F,

Cl, Br, I, N(R7, R8), N(O)(R7, R8), NO, NO₂, O(R7),
 S(R7), SO(R7), SO₂(R7), OSO₂(R7), PO₃(R7), OPO₃(R7),
 CO(R7), COO-(R7), CONH-(R7), CON(R7, R8), CN, C≡C-(R7),
 N=C-(R9), aryl, aralkyl, heteroaryl and heteroaralkyl,;

- 5 in which R7, R8 are independently selected from the
 group consisting of H, alkyl, alkylene, aryl,
 heteroaryl, aralkyl, C(O)-(R7), C(S)-(R7), alkyl-O(R7),
 alkyl-S(R7) and alkyl-N(R7, R8), in which, when R7 and
 R8 are simultaneously present, they may be linked
 10 together to form a ring, R9 is selected from the group
 consisting of alkyl, alkylene, aryl, heteroaryl,
 aralkyl, alkyl-O(R7), alkyl-S(R7) and alkyl-N(R7, R8);
 and to any other acceptable substituent known to those
 skilled in the art at the date of filing of the
 15 invention.

"Amino acid" comprises the natural and artificial amino
 acids, in enantiomerically pure form or as a mixture.

"Metabolizable substituent" includes any substituent
 containing at least one functional group that can be
 20 cleaved by metabolism of a living being. Examples of
 cleavable functional groups include amides, imides,
 imines, esters, lactones, lactams, acetals,
 hemiacetals, carbonates, carbamates and ureas.

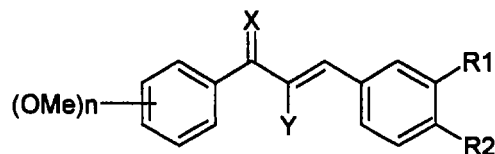
"Organic acid" includes organic molecules containing at
 25 least one proton-donating functional group, for example
 COOH, SO₃H, OSO₃H, PO₃H₂, OPO₃H₂, and optionally OH when
 the latter functional group is directly linked to an
 aromatic or heteroaromatic nucleus.

"Mineral acid" includes proton (H^+) -donating mineral products, for example HCl , HBr , HI , HIO_4 , H_2S , H_2SO_4 , H_3PO_2 , H_3PO_4 and HNO_3 ; or species capable of giving mineral acids by reaction, for example $AlCl_3$, $AlBr_3$,
 5 $SnCl_4$, $SiCl_4$, $TiCl_4$, $FeCl_3$ or $RuCl_3$ which may react in a protic solvent such as water according to:

$$M_aZ_b + bH_2O \rightarrow a\{M(OH)_b \text{ and/or } [MO_n(OH)_{b-2n} + nH_2O]\} + bHZ$$
 with a , b and n being whole or real stoichiometric coefficients, M chosen from the metals given above as
 10 examples, and Z is a halogen.

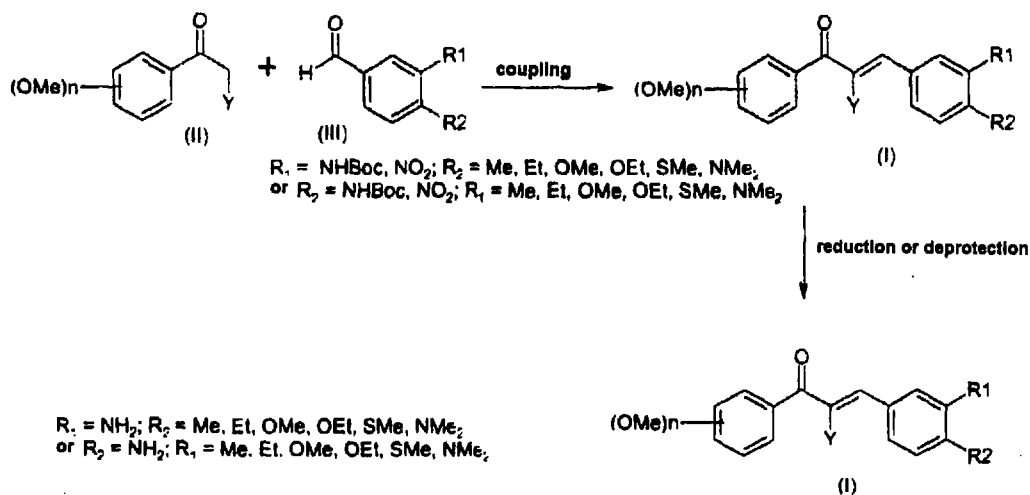
In the text hereinbelow, the products corresponding to Formula (I) will be represented by a general formula (I) in which Ar is replaced with a phenyl substituted with n methoxy groups, it being
 15 understood that n takes the value 2, 3 or 4 and that the position of the methoxy groups on the phenyl is as defined above.

The chalcones of general formula (I)



20 in which X represents an oxygen atom, Y is other than a halogen atom and n , R_1 and R_2 are defined as above with R_1 or R_2 representing an amino radical, may be prepared by coupling between an aromatic ketone of general formula (II) in which Y is other than a halogen atom,
 25 and an aromatic aldehyde of general formula (III) under the conditions described in J. Med. Chem., 1990, 33,

1948. This coupling is followed by reduction of the nitro radical to an amino radical according to scheme (I):



5

Scheme (I)

The process is generally performed in apparatus of Soxhlet type at the reflux point of an alcohol, such as ethanol, in the presence of

10 piperidine, acetic acid and molecular sieves.

It is understood that the coupling between the ketone of general formula (II) and the aldehyde of general formula (III) may also be carried out with a radical R_1 or R_2 in which the nitro radical is replaced

15 with an amino radical. It is understood that the coupling may also be carried out with the radical R_1 or R_2 representing any protected form of the aromatic amine function, such as, by way of nonlimiting example, tert-butyloxycarbonylamino (NHBoc). The cleavage of the

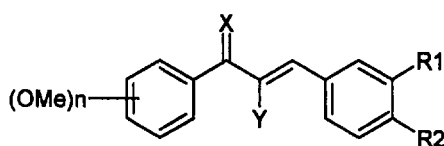
20 protecting group on the aromatic amine function may be carried out under the conditions described in

Protective Groups in Organic Chemistry (edited by Wiley). In the particular case of the reduction of the nitro radical to an amino radical, it is possible to use catalytic reduction methods, for instance hydrogen
 5 in the presence of a catalyst such as 3% palladium-on-charcoal, or chemical reduction, for instance iron in the presence of hydrochloric acid or stannous chloride.

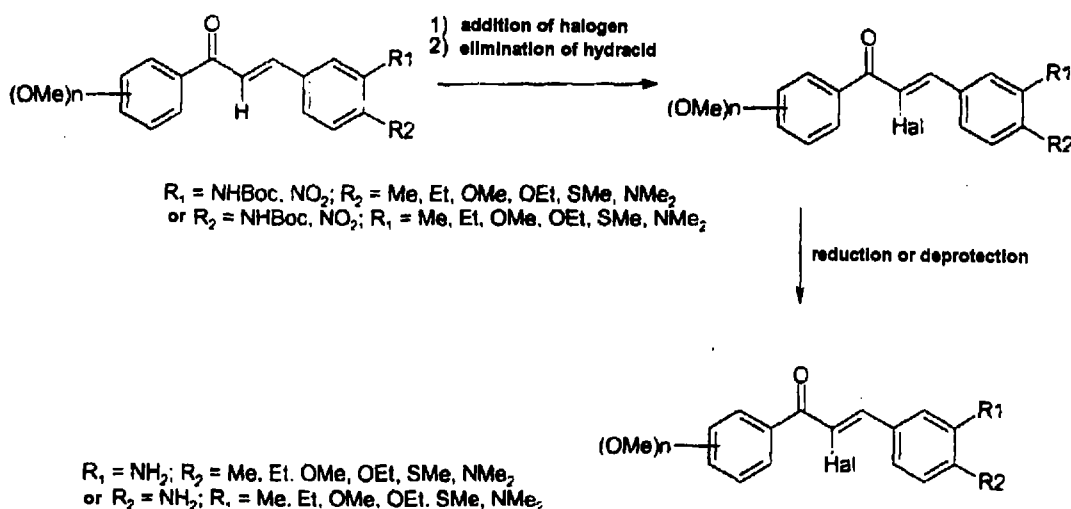
The aromatic aldehydes of general formula (III) are either commercially available or previously
 10 described in the literature.

The aromatic ketones of general formula (II) are described in the literature and generally prepared from the corresponding aromatic aldehydes which are commercially available. When Y represents an optionally
 15 substituted alkyl or aralkyl radical, the process is advantageously performed by reacting the aldehyde with a suitably chosen organometallic reagent, followed by oxidizing the benzyl alcohol thus obtained under the conditions described in J. Med. Chem., 1990, 33, 1948.
 20 When Y represents a carboxyl, carboxylate or carboxamide radical, it is advantageous to react said aldehyde with a diazoacetate under the conditions described in Synlett, 1996, 369.

The chalcones of general formula (I)



in which X represents an oxygen atom, Y represents a halogen atom, preferably a bromine or chlorine atom, and n, R₁ and R₂ are defined as above with R₁ or R₂ representing an amino, may be prepared by addition of
 5 halogen followed by dehydrohalogenation of a chalcone in which Y represents a hydrogen atom, according to scheme (II). It is particularly advantageous to perform this addition-elimination sequence on a protected form of the amino radical, such as the nitro or NHBoc
 10 radical, and then to reduce or deprotect.

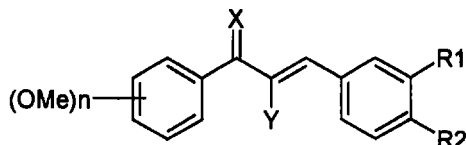


Scheme (II)

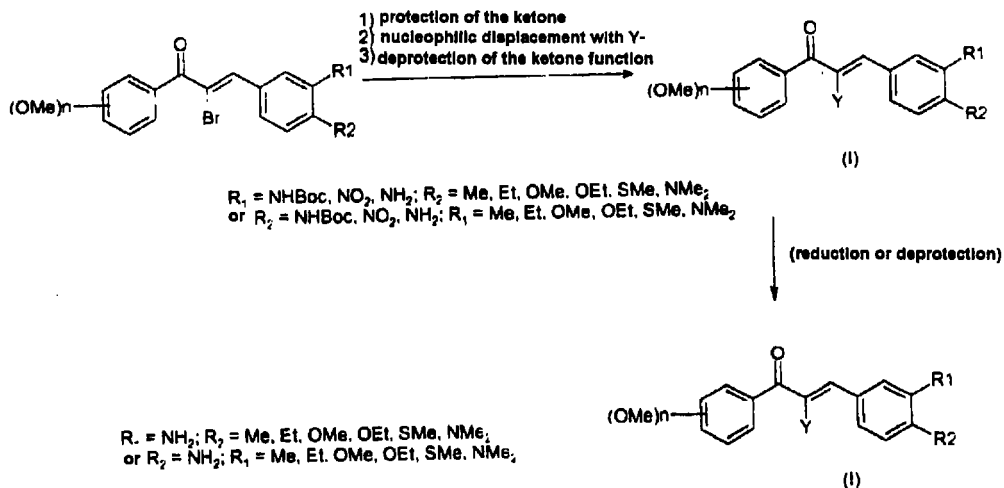
The addition of halogen, preferably bromine or chlorine, is generally carried out in a solvent such
 15 as chloroform or carbon tetrachloride at a temperature of between 0 and 50°C. The dehydrohalogenation is generally carried out in a solvent such as dichloromethane in the presence of an organic or mineral base, for instance triethylamine, sodium
 20 hydroxide or potassium carbonate, at a temperature of

between 0°C and the reflux point of the reaction medium.

The chalcones of general formula (I)



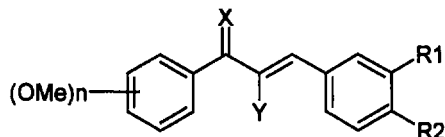
5 in which X represents an oxygen atom, Y is other than a halogen atom and n, R₁ and R₂ are defined as above with R₁ or R₂ representing an amino radical, may also be prepared by nucleophilic displacement of a product of general formula (I) in which Y represents a halogen
10 atom, preferably a bromine atom. In this case, it is advantageous to protect the ketone function beforehand according to the general scheme (III):



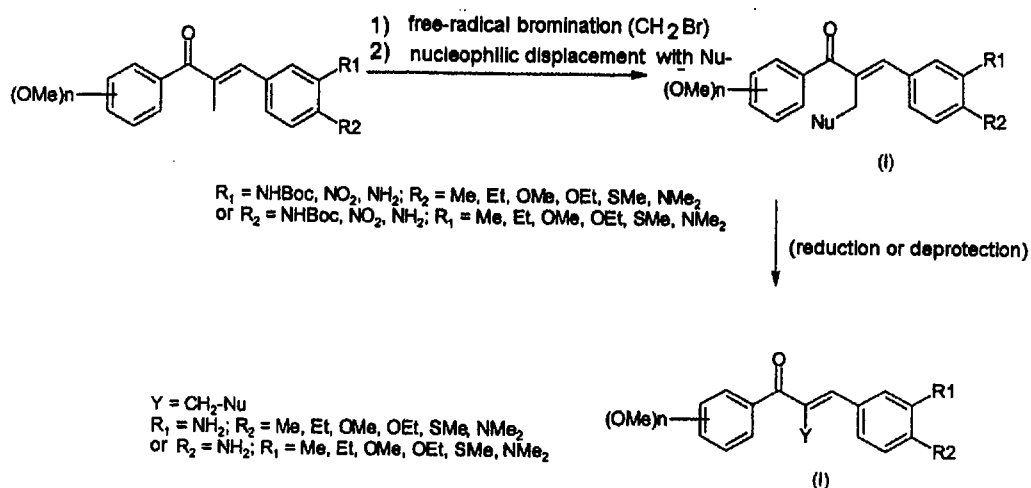
Scheme (III)

15

The chalcones of general formula (I)



in which X represents an oxygen atom, Y represents a substituted methylene radical and n, R₁ and R₂ are defined as above with R₁ or R₂ representing an amino radical, may also be prepared by nucleophilic displacement of a product of general formula (I) in which Y represents a bromomethyl radical, under the conditions described in J. Org. Chem., 1967, 3830, according to the general scheme (IV):

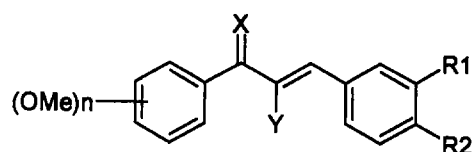


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Scheme (IV)

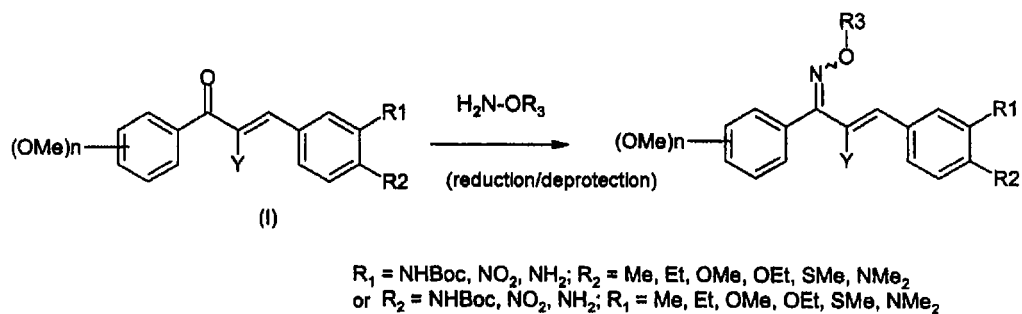
Schemes (III) and (IV) illustrate, in a nonlimiting manner, methods for modifying the substituents Y on a preformed chalcone, it being possible for any other method known to those skilled in the art to be used to modify said substituent Y.

The chalcones of general formula (I)



in which X represents a radical N-OR₃ and Y, n, R₁ and R₂ are defined as above with R₁ or R₂ representing an

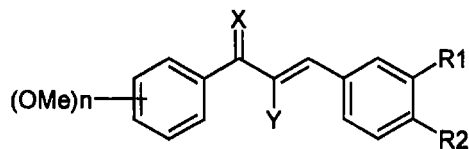
amino, may be prepared by the action of a hydroxylamine on a product of general formula (I) in which X represents an oxygen atom, according to scheme (V):



5

Scheme (V)

It is understood that the present invention also relates to prodrugs, in particular to water-soluble prodrugs, of the chalcones of general formula (I)



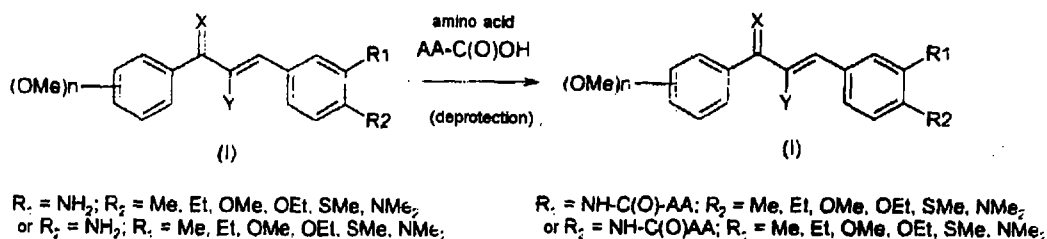
10

in which X represents an oxygen atom or a radical N-OR₃, and Y, n, R₁ and R₂ are defined as above with R₁ or R₂ representing a cleavable derivative of the amino radical. Among the cleavable derivatives of the amino radical, the ones more particularly intended are amino acid derivatives which may be prepared by coupling of peptide type between

- (i) a product of general formula (I) in which X represents an oxygen atom or a radical N-OR₃, in which Y, n, R₁ and R₂ are defined as above with R₁ or R₂ representing an amino radical, and

20

- (ii) a natural or modified amino acid, optionally in protected form, with the exception of its carboxylic function, according to scheme (VI), it being understood that when the amino acid is partially protected, the coupling is followed by a deprotection step:

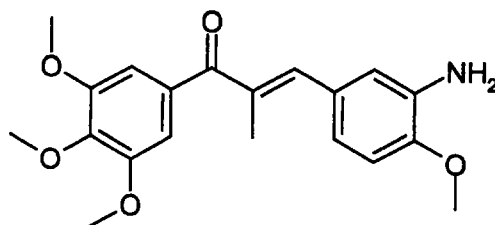


Scheme (VI)

The coupling of peptide type is carried out under standard conditions, in an organic solvent, such as dichloromethane, in the presence of a coupling and/or activating agent such as, by way of nonlimiting example, the EDCI/HOBT mixture.

The examples which follow are given by way of illustration of the invention.

Example 1: E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone



20 Step 1: 2.24g of 1-(3,4,5-trimethoxyphenyl)propenone, which may be prepared according to Biorg. Med. Chem.

1998, 8(9), 1051, 1.85 g of 3-nitro-4-methoxybenzaldehyde, 2 mL of piperidine and 1 mL of acetic acid in 20 mL of ethanol are successively added to a 25 mL three-necked flask on which is mounted a Soxhlet filled with 3Å molecular sieves. The medium is refluxed for 48 hours. After cooling, the reaction medium is concentrated under reduced pressure and then taken up in 100 mL of ethyl acetate, and the organic phase is washed with water, dried over magnesium sulfate and concentrated under reduced pressure. The crude product is purified by flash chromatography on silica gel (70-230 mesh), eluting with a mixture of cyclohexane and ethyl acetate (80/20 by volume). 2 g of E-3-(3-nitro-4-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone are thus obtained, containing about 5% of the Z isomer, in the form of a yellow solid with a melting point of between 45 and 50°C.

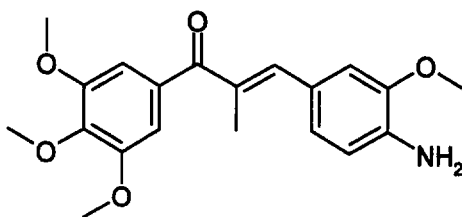
Step 2: 485 mg of 3-(3-nitro-4-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone, obtained in the preceding step, are placed in suspension in 20 mL of ethanol and 2.5 mL of water in a 50 mL three-necked flask. The mixture is brought to reflux and 0.25 mL of 37% hydrochloric acid is then added, followed by portionwise addition of 2.09 g of iron filings. The reflux is maintained for 30 minutes and the mixture is then cooled. After addition of 2 g of potassium carbonate, the insoluble materials are filtered and washed with 3 times 25 mL of ethanol. After

concentrating the filtrates under reduced pressure, the residue is taken up in 50 mL of water and extracted with 3 times 50 mL of ethyl acetate. The combined organic phases are washed with water, dried over
 5 magnesium sulfate and concentrated under reduced pressure. The orange-colored residue thus obtained is purified by flash chromatography on silica gel (70-230 mesh), eluting with a mixture of cyclohexane and ethyl acetate (70/30 by volume). 0.35 g of pure E-3-(3-amino-
 10 4-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)-propenone is thus obtained in the form of a pale yellow powder, the characteristics of which are as follows:

- melting point (Kofler) = 142°C
- elemental analysis: %C = 67.26; %H = 6.80; %N = 3.97.

15

Example 2: E-3-(4-Amino-3-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone

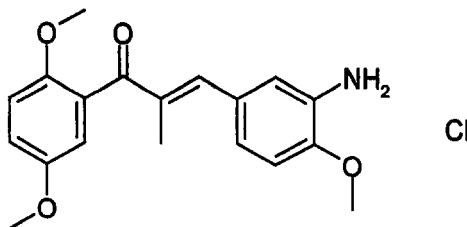


Step 1: Working as in step 1 of example 1, but starting
 20 with 2.24 g of 1-(3,4,5-trimethoxyphenyl)propenone and 1.81 g of 4-nitro-3-methoxybenzaldehyde in 75 mL of ethanol containing 2 mL of piperidine and 1 mL of acetic acid, by refluxing for 96 hours, and after purification by flash chromatography on silica gel
 25 (70-230 mesh) eluting with a mixture of cyclohexane and

ethyl acetate (80/20 by volume), 0.7 g of E-3-(4-nitro-3-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone free of Z isomer is obtained in the form of a very viscous yellow oil.

- 5 Step 2: Working as in step 2 of example 1, but starting with 700 mg of 3-(4-nitro-3-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone and 3.09 g of iron, and after purification by flash chromatography on silica gel (70-230 mesh) eluting with a mixture of
- 10 cyclohexane and ethyl acetate (70/30 by volume), 0.55 g of pure E-3-(4-amino-3-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone is obtained in the form of a pale yellow powder, the characteristics of which are as follows:
- 15 - melting point (Kofler) = 140°C
 - elemental analysis: %C = 67.27; %H = 6.68; %N = 3.93.

Example 3: E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(2,5-dimethoxyphenyl)propenone hydrochloride



20 Step 1: Working as in step 1 of example 1, but starting with 3.8 g of 1-(2,5-dimethoxyphenyl)propenone and 3.7 g of 3-nitro-4-methoxybenzaldehyde in 75 mL of ethanol containing 4 mL of piperidine and 2 mL of

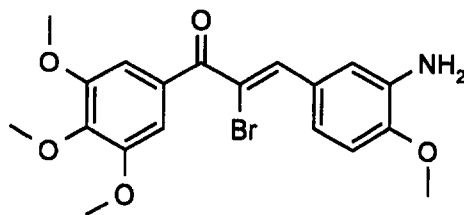
acetic acid, by refluxing for 96 hours, and after purification by flash chromatography on silica gel (70-230 mesh) eluting with a mixture of cyclohexane and ethyl acetate (80/20 by volume), followed by

5 recrystallization from isopropyl acetate, 0.3 g of E-3-(3-nitro-4-methoxyphenyl)-2-methyl-1-(2,5-dimethoxyphenyl)propenone free of Z isomer, is obtained in the form of yellow crystals melting at 104°C.

Step 2: Working as in step 2 of example 1, but starting
10 with 280 mg of 3-(3-nitro-4-methoxyphenyl)-2-methyl-1-(2,5-dimethoxyphenyl)propenone and 1.03 g of iron, and after purification in the form of the hydrochloride recrystallized from a mixture of ethanol and diethyl ether, 0.25 g of pure E-3-(3-amino-4-methoxyphenyl)-2-
15 methyl-1-(2,5-dimethoxyphenyl)propenone hydrochloride is obtained in the form of pale yellow crystals, the characteristics of which are as follows:

- melting point (Kofler) = 178°C
- elemental analysis: %C = 62.47; %H = 6.01; %N = 3.77;
- 20 %Cl = 9.14.

Example 4: E-3-(3-Amino-4-methoxyphenyl)-2-bromo-1-(3,4,5-trimethoxyphenyl)propenone



Step 1: Working as in step 1 of example 1, but starting with 3.8 g of 3,4,5-trimethoxyacetophenone and 3.44 g of 3-nitro-4-methoxybenzaldehyde in 95 mL of methanol containing 2.37 mL of sodium hydroxide, overnight at
5 room temperature, and after purification by flash chromatography on silica gel (70-230 mesh) eluting with a mixture of cyclohexane and ethyl acetate (80/20 by volume), 6.27 g of E-3-(3-nitro-4-methoxyphenyl)-1-(3,4,5-trimethoxyphenyl)propenone free of Z isomer,
10 are obtained in the form of a viscous yellow oil.

Step 2: 500 mg of E-3-(3-nitro-4-methoxyphenyl)-1-(3,4,5-trimethoxyphenyl)propenone are dissolved in 8 mL of chloroform in a 50 mL three-necked flask. 40 μ L of bromine dissolved in 3 mL of chloroform are then
15 added dropwise. After stirring for 3 hours at room temperature, a further 40 μ L of bromine dissolved in 3 mL of chloroform are added dropwise and stirring is continued for a further 3 hours at room temperature. After concentration under reduced pressure, the residue
20 is purified by flash chromatography on silica gel (70-230 mesh), eluting with a mixture of dichloromethane and cyclohexane (50/50 by volume). 554 mg of 2,3-dibromo-3-(3-nitro-4-methoxyphenyl)-1-(3,4,5-trimethoxyphenyl)propanone are thus obtained,
25 the characteristic of which is as follows:
- mass spectrum (EI/DCI) $M^+ = 533$.

Step 3: 153 mg of 2,3-dibromo-3-(3-nitro-4-methoxyphenyl)-1-(3,4,5-trimethoxyphenyl)propanone are

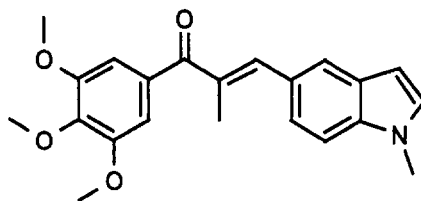
dissolved in 6 mL of dichloromethane dried over 4Å molecular sieves, in a 10 mL three-necked flask, followed by addition of 81 µL of anhydrous triethylamine, and the mixture is stirred at room temperature for 24 hours. A further 40 µL of anhydrous triethylamine are then added and the mixture is stirred for a further 72 hours at room temperature. After addition of 5 mL of distilled water, the organic phase is separated out by settling of the phases, washed with twice 5 mL of water, dried over magnesium sulfate and concentrated under reduced pressure. 116 mg of E-2-bromo-3-(3-nitro-4-methoxyphenyl)-1-(3,4,5-trimethoxyphenyl)propenone are thus obtained, containing about 10% of its Z isomer, which product is used without further purification in the rest of the synthesis.

Step 4: 67.2 mg of E-2-bromo-3-(3-nitro-4-methoxyphenyl)-1-(3,4,5-trimethoxyphenyl)propenone are placed in suspension in 2 mL of ethanol, 167.5 mg of stannous chloride, in its dihydrate form, are then added and the mixture is heated at 80°C for 1 hour. After cooling and diluting with 2 mL of water, the pH is brought to 8 by addition of saturated sodium hydrogen carbonate solution and the resulting mixture is extracted 3 times with 5 mL of ethyl acetate. The organic phase is washed with water, dried over magnesium sulfate and concentrated under reduced pressure. The crude product is purified by flash chromatography on silica gel

(70-230 mesh) eluting with dichloromethane. 34.4 mg of E-2-bromo-3-(3-amino-4-methoxyphenyl)-1-(3,4,5-trimethoxyphenyl)propenone, free of the Z isomer, are thus obtained, the characteristics of which are as follows:

- chromatography on a silica plate: $R_f = 0.16$ (solvent: dichloromethane)
- mass spectrum (EI/DCI) $M^+ = 422$.

10 **Example 5: E-2-Methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone**

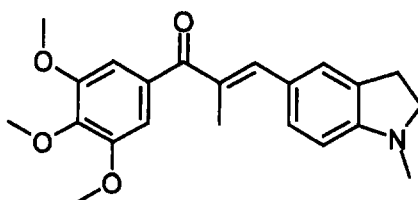


The process is performed as in step 1 of example 1, but starting with 4.49 g of 1-(3,4,5-trimethoxyphenyl)-propanone and 3.18 g of 1-methylindole-5-carboxaldehyde - which may be prepared according to Terent'ew et al., J. Gen. Chem USSR (1962), 32, 1311 - in 100 mL of ethanol containing 4 mL of piperidine and 2 mL of acetic acid, by refluxing for 48 hours. After purification by flash chromatography on silica gel (70-230 mesh), eluting with a mixture of cyclohexane and ethyl acetate (80/20 by volume), followed by recrystallization from ethanol, 2.5 g of pure E-2-methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone are obtained in the form of

pale yellow crystals, the characteristics of which are as follows:

- melting point (Kofler) = 136°C.
- elemental analysis: % C = 72.52 ; %H = 6.45;
- 5 % N = 3.87.

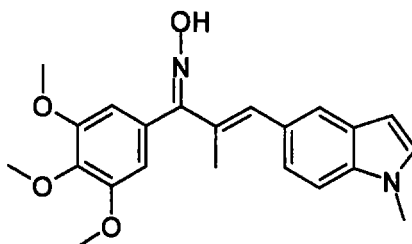
Example 6: E-2-Methyl-3-(1-methyl-2,3-dihydro-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone



- 10 The process is performed as in step 1 of example 1, but starting with 4.49 g of 1-(3,4,5-trimethoxyphenyl)propenone and 3.22 g of 1-methyl-2,3-dihydroindole-5-carboxaldehyde - which may be prepared according to Gavinecki et al., Org. Prep. Proced. Int.
- 15 (1998), 30, 455-60 - in 100 mL of ethanol containing 4 mL of piperidine and 2 mL of acetic acid, by refluxing for 48 hours. After purification by flash chromatography on silica gel (70-230 mesh), eluting with a mixture of cyclohexane and ethyl acetate (70/30
- 20 by volume), followed by crystallization from isopropyl ether, 1.2 g of pure E-2-methyl-3-(1-methyl-2,3-dihydro-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)-propenone are obtained in the form of pale yellow crystals, the characteristics of which are as follows:

- melting point (Kofler) = 85°C.
- elemental analysis : % C = 71.91 ; %H = 7.04;
% N = 3.79.

5 **Example 7: E-2-Methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenoneoxime**



100 mg of E-2-methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone, obtained in example
 10 5, 29 mg of hydroxylamine hydrochloride, 0.5 mL of piperidine and 5 mL of ethanol are placed in a 25 mL three-necked flask. The mixture is refluxed with stirring for 5 hours and stirring is then continued at room temperature for 20 hours. After concentration
 15 under reduced pressure, the reaction medium is taken up in 20 mL of water and 25 mL of ethyl acetate. The organic phase is separated out by settling, washed with water and concentrated to dryness under reduced pressure. After purification by flash chromatography on
 20 silica gel (70-230 mesh), eluting with a mixture of cyclohexane and ethyl acetate (80/20 by volume), followed by recrystallization from ethanol, 70 mg of a 60/40 mixture of the Z and E isomers of E-2-methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)-

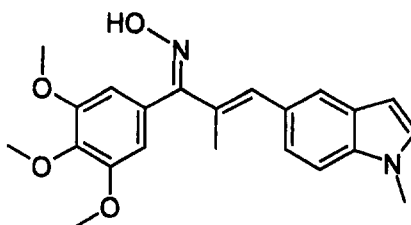
propenoneoxime are obtained in the form of white crystals, the characteristics of which are as follows:

- melting point (Kofler) = 150°C.
- elemental analysis: % C = 68.63 ; %H = 6.30; %

5

N = 7.03.

Example 8: E-2-Methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone Z-oxime

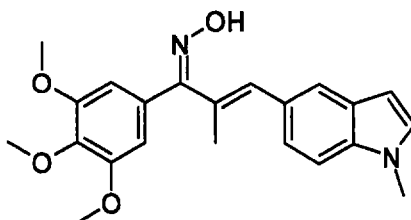


10 820 mg of the 60/40 mixture of the Z and E isomers of E-2-methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenoneoxime, prepared as in example 7, may be separated on a chiral column of Whelk01 S,S 10 μ M type, containing 700 g of chiral

15 stationary phase, eluting with a mixture of n-heptane/ethanol/dichloromethane (68/2/30 by volume) - containing 0.1% trifluoroacetic acid - at a flow rate of 100 ml/min. By isolating the first fraction eluted (retention time = 22 minutes), 434 mg of E-2-methyl-

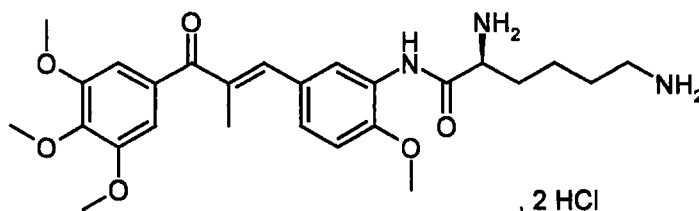
20 3-(1-methyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)-propenone Z-oxime are obtained.

Example 9: E-2-Methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone E-oxime



By working as in example 8, but isolating the second
5 fraction eluted (retention time = 28 minutes), 328 mg
of E-2-methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3,4,5-
trimethoxyphenyl)propenone E-oxime are obtained.

**Example 10: (S)-2,6-Diaminohexanoic acid {2-methoxy-5-
10 [2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]-
phenyl}amide dihydrochloride**



Step 1: 1 g of Boc-Lys(Boc)-OH·DCHA is dissolved in
10 ml of ethyl acetate in a 50 ml round-bottomed flask,
15 followed by addition of 1.2 equivalents of aqueous 2M
sulfuric acid solution (i.e. 2.2 ml). Two clear phases
are obtained. The organic phase is set aside. 5 ml of
cold distilled water are added to the aqueous phase and
the resulting mixture is then extracted with 2 x 5 ml
20 of ethyl acetate. The organic phases are combined and
washed with 2 x 10 ml of distilled water and then dried

over magnesium sulfate and the solvent is evaporated off on a rotary evaporator (bath temperature below 40°C). The colorless oil is dried under vacuum to give 0.47 g of Boc-Lys(Boc)-OH.

- 5 Step 2: The Boc-Lys(Boc)-OH (458 mg, 1.319 mmol) prepared in step 1 is dissolved in 7 ml of ethyl acetate in a 50 ml three-necked flask equipped with a thermometer and a bubble counter. The colorless solution is cooled to 6°C (water bath + ice), followed
- 10 by addition of N-methylmorpholine (1.2 equivalents, 146.5 µl), followed by pivaloyl chloride (1.2 equivalents, 163 µl). The white suspension obtained is maintained at 5°C for 2 hours 30 minutes and 3-(3-amino-4-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxy-
- 15 phenyl)propenone (392.9 mg, 1 equivalent) suspended in 10 ml of ethyl acetate is then added. The suspension is stirred at room temperature for 72 hours. The suspension is filtered through a sinter funnel and the solid is then rinsed with ethyl acetate. The filtrate
- 20 is washed with 10 ml of distilled water and then with 5 ml of aqueous 1N sodium hydroxide solution, 10 ml of distilled water and 10 ml of saturated NaCl solution. The organic phase is dried over magnesium sulfate and the solvent is evaporated off on a rotary evaporator.
- 25 The crude reaction product thus obtained is taken up in 5 ml of ethyl acetate and 3 ml of absolute ethanol, followed by addition of 1 ml of 4.8N hydrochloric ethanol. The medium is heated at 49°C until the

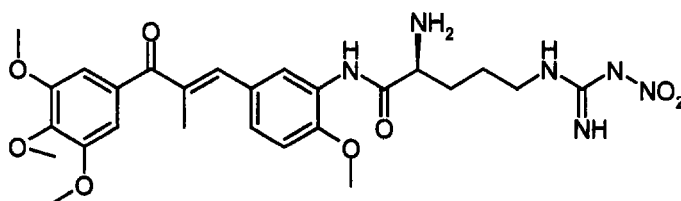
expected product is obtained, the reaction progress being monitored by LC/MS. On cooling, a white solid precipitates out. The solid is filtered on a sinter funnel and washed with ethyl acetate. 299.3 mg of a
 5 pulverulent white solid are obtained, the characteristics of which are as follows:

- LC/MS (50x4.6 mm column of Hypersil BDS C18 3 μ m silica; linear elution gradient from 5% to 90% acetonitrile, containing 0.05% trifluoroacetic acid, in
 10 water, also containing 0.05% trifluoroacetic acid, in 3.5 minutes at a flow rate of 1 mL/minute); retention time = 2.67 minutes; MS: 486.3 ($[M+H]^+$)

- Elemental analysis: %C = 52.06; %H = 6.73; %N = 7.02; % Cl = 12.7.

15

Example 11: 2-Amino-5-[3-(1-nitroguanidino)]-pentanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide hydrochloride



HCl

20 Step 1: 3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone (1 g, 0.279 mmol) is dissolved in 150 ml of dichloromethane, followed by addition of EEDQ (760.1 mg, 1.1 equivalents) and N α -Boc-N- ω -nitro-L-arginine (980.2 mg, 1.1 equivalents).

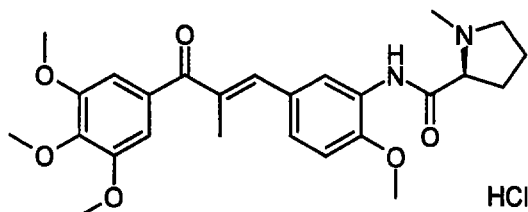
The suspension is stirred at room temperature for 20 hours. The solution obtained is concentrated under vacuum on a rotary evaporator. The crude reaction product is purified by flash chromatography on silica
5 gel (AC.C 35-70 μ m silica 60), eluting with a mixture of ethyl acetate and cyclohexane (80/20 by volume).

1.5 g of 2-(1,1-dimethylethyloxycarbonylamino)-5-[3-(1-nitroguanidino)]pentanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide
10 are obtained in the form of a brown oil.

Step 2: This oil is dissolved in 10 ml of ethyl acetate, followed by addition of 4 ml of ethanol and 2 ml of 4.8N hydrochloric ethanol solution. The medium is heated at 60°C (temperature of the oil bath) for
15 12 hours. The white solid obtained is filtered off on a sinter funnel, and then rinsed with ethyl acetate and dried under vacuum. 1.07 g of 2-amino-5-[3-(1-nitroguanidino)]pentanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide
20 hydrochloride are thus obtained in the form of a white powder, the characteristics of which are as follows:

- Mass spectrum (EI): m/z = 558
- Elemental analysis: %C = 52,84 ; %H = 6,22 ; %N = 14,14; %Cl = 6,12.

Example 12: 1-Methylpyrrolidine-2-carboxylic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide hydrochloride

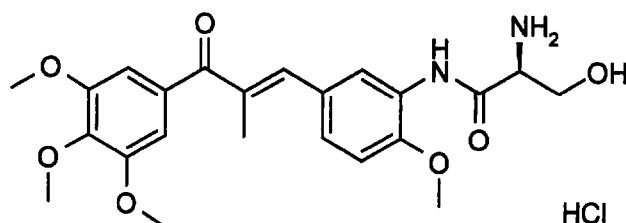


- 5 3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone (450 mg, 1.259 mmol) is dissolved in 45 ml of DMF, followed by addition of HOBT (578.3 mg, 3 equivalents), HBTU (1.43 g, 3 equivalents), N-methyl-L-proline (487.9 mg, 3
- 10 equivalents) and N,N-diisopropylethylamine (1.31 ml, 6 equivalents). The medium is stirred at room temperature for 3 hours. The solvent is evaporated off under vacuum (P=9 mbar, T bath = 44°C). The crude product is taken up in 30 ml of distilled water and the aqueous phase is
- 15 then extracted with 5 x 60 ml of dichloromethane. The organic phase is washed with saturated NaCl solution and then dried over magnesium sulfate. The solvent is evaporated off under vacuum. The crude reaction product is purified by flash chromatography on silica gel,
- 20 eluting with a dichloromethane/methanol mixture (95/5 by volume). The 197 mg thus purified are dissolved in ethyl acetate (2 ml), followed by addition of 4.8N hydrochloric ethanol solution (17 µl) and the medium is stirred at room temperature for 18 hours. After

concentration of the solvent followed by drying, 205 mg of 1-methylpyrrolidine-2-carboxylic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]-phenyl}amide are obtained, the characteristics of which
5 are as follows:

- LC/MS (50x4.6 mm column of Hypersil BDS C18 3 μ m silica; linear elution gradient from 5 to 90% acetonitrile, containing 0.05% trifluoroacetic acid, in water, also containing 0.05% trifluoroacetic acid, in
10 3.5 minutes at a flow rate of 1 mL/minute); retention time = 3.03 minutes.
- Mass spectrum: 486.32 ($[M+H]^+$)

Example 13: (S)-2-Amino-3-hydroxypropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)-propenyl]phenyl}amide hydrochloride
15



Step 1: 3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone (700 mg, 1.96 mmol) is
20 dissolved in 25 ml of dichloromethane, followed by addition of HOBT (298 mg, 1.2 equivalents), EDCI (422 mg, 1.2 equivalents) and N-Boc-L-serine (452 mg, 1.2 equivalents). The medium is stirred at room temperature for 3 days. 50 ml of dichloromethane and

25 ml of water are added. The organic phase is separated out after settling of the phases, washed with saturated NaCl solution and then dried over magnesium sulfate. The solvent is evaporated off under vacuum.

5 The crude reaction product is purified by flash chromatography on silica gel, eluting with a dichloromethane/ethyl acetate mixture (7/3 by volume). 800 mg of (S)-2-Boc-amino-3-hydroxypropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)-propenyl]phenyl}amide are thus obtained in the form of
10 an orange-colored oil which is used without further modification in the following step, the characteristics of which product are as follows:

- Mass spectrum (EI) : $m/z = 544$

15 Step 2:

(S)-2-Boc-amino-3-hydroxypropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]-phenyl}amide (800 mg) is dissolved in 2.5 ml of dioxane, followed by dropwise addition of 2.5 ml of a
20 4M solution of hydrochloric acid in dioxane. The reaction medium is stirred at room temperature for 20 hours; after concentration of the solvent under reduced pressure, the residue is taken up in 50 ml of water, brought to pH 8 by addition of saturated aqueous
25 sodium hydrogen carbonate solution and then extracted three times with 25 ml of dichloromethane. The combined organic phases are washed with water, dried over magnesium sulfate and concentrated under reduced

pressure. The residue is purified by flash chromatography on silica gel, eluting with a dichloromethane/methanol mixture (95/5 by volume).

360 mg of (S)-2-amino-3-hydroxypropanoic acid

5 {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide are thus obtained in the form of an amorphous beige-colored solid.

240 mg (0.54 mmol) of the base obtained above are dissolved in 5 ml of diisopropyl ether and 1 ml of

10 methanol. 0.54 ml of a 1M solution of hydrochloric acid in diisopropyl ether is then added dropwise and the mixture is left to crystallize for three hours. After filtration followed by air-drying, 200 mg of (S)-2-amino-3-hydroxypropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide

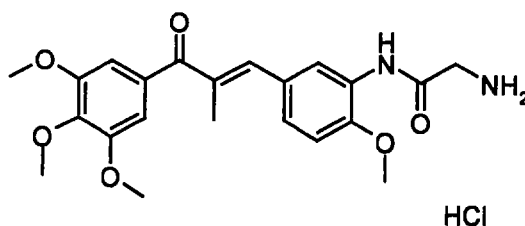
15 hydrochloride are obtained in the form of white crystals, the characteristics of which are as follows:

- Mass spectrum (EI) : $m/z = 494$

- Elemental analysis : %C = 56.93 ; %H = 6.58 ; %N = 5.61; %Cl = 7.12.

20

Example 14: Aminoacetic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide hydrochloride



Step 1: 3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone (175 mg, 0.5 mmol) is dissolved in 10 ml of dichloromethane, followed by addition of HOBT (75 mg, 1.1 equivalents), EDCI (106 mg, 1.1 equivalents) and N-Boc-glycine (96 mg, 1.1 equivalents). The medium is stirred at room temperature for 3 days. 10 ml of dichloromethane and 10 ml of water are added. The organic phase is separated out after settling of the phases, washed with saturated sodium chloride solution and then dried over magnesium sulfate. The solvent is evaporated off under vacuum. The crude reaction product is purified by flash chromatography on silica gel, eluting with a dichloromethane/ethyl acetate mixture (6/4 by volume). 250 mg of Boc-aminoacetic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide are thus obtained in the form of a beige-colored foam which is used without further modification in the following step, the characteristics of which product are as follows:

- Mass spectrum (EI): $m/z = 514$

Step 2:

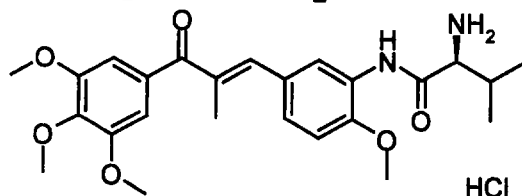
250 mg of Boc-aminoacetic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide are dissolved in 2 ml of dioxane, followed by dropwise addition of 1.1 ml of a 4M solution of hydrochloric acid in dioxane. The reaction medium is stirred at room temperature for 20 hours. After concentration of the

solvent under reduced pressure, the residue is dissolved in 5 ml of diisopropyl ether and 1 ml of methanol, and is then left to crystallize for 2 hours. After filtration followed by air-drying, 130 mg of

5 aminoacetic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide hydrochloride are obtained in the form of white crystals, the characteristics of which are as follows:

- Mass spectrum (EI): $m/z = 450$
- 10 - Elemental analysis: %C = 58.03 ; %H = 6.17 ; %N = 6.11; %Cl = 8.29.

Example 15: (S)-2-Amino-3-methylbutanoic acid
{2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxy-
 15 **phenyl)propenyl]phenyl}amide hydrochloride**



Step 1: 3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone (176 mg, 0.5 mmol) is dissolved in 10 ml of dichloromethane, followed by

20 addition of HOBT (75 mg, 1.1 equivalents), EDCI (106 mg, 1.1 equivalents) and N-Boc-L-valine (120 mg, 1.1 equivalents). The medium is stirred at room temperature for 3 days. 15 ml of dichloromethane and 10 ml of water are added. The organic phase is

25 separated out after settling of the phases, washed with

saturated sodium chloride solution and then dried over magnesium sulfate. The solvent is evaporated off under vacuum. The crude reaction product is purified by flash chromatography on silica gel, eluting with a
5 dichloromethane/ethyl acetate mixture (8/2 by volume).
260 mg of (S)-2-Boc-amino-3-methylbutanoic acid
{2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-
trimethoxyphenyl)propenyl]phenyl}amide are thus
obtained in the form of a beige-colored foam which is
10 used without further modification in the following
step, the characteristics of which product are as
follows:

- Mass spectrum (EI): $m/z = 556$

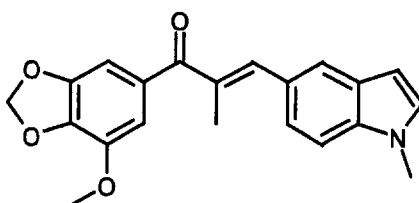
Step 2:

15 (S)-2-Boc-amino-3-methylbutanoic acid {2-methoxy-5-[2-
methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]-
phenyl}amide (260 mg) is dissolved in 2 ml of dioxane,
followed by dropwise addition of 1.05 ml of a 4M
solution of hydrochloric acid in dioxane. The reaction
20 medium is stirred at room temperature for 20 hours.
After concentration of the solvent under reduced
pressure, the residue is dissolved in 5 ml of
diisopropyl ether and 0.5 ml of methanol, and is then
left to crystallize for 3 hours. After filtration
25 followed by air-drying, 170 mg of (S)-2-amino-3-methyl-
butanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-
trimethoxyphenyl)propenyl]phenyl}amide hydrochloride

are obtained in the form of white crystals, the characteristics of which are as follows:

- Mass spectrum (EI): $m/z = 493$
- Elemental analysis: %C = 60.56 ; %H = 7.03 ; %N = 5.16; %Cl = 7.84.

Example 16: E-2-Methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3-methoxy-4,5-methylenedioxyphenyl)propenone



The process is performed as in step 1 of example 1, but starting with 2.1 g of 1-(3-methoxy-4,5-methylenedioxyphenyl)propanone - which may be prepared according to J. Org. Chem. 1981, 46(14), 2969-71 - and 3.18 g of 1-methylindole-5-carboxaldehyde - which may be prepared according to Terent'ew et al., J. Gen. Chem USSR (1962), 32, 1311 - in 100 mL of ethanol containing 2 mL of piperidine and 1 mL of acetic acid, by refluxing for 96 hours. After purification by flash chromatography on silica gel (70-230 mesh), eluting with a mixture of cyclohexane and ethyl acetate (80/20 by volume), followed by recrystallization from isopropanol, 1.05 g of pure E-2-methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3-methoxy-4,5-methylenedioxyphenyl)propenone are obtained

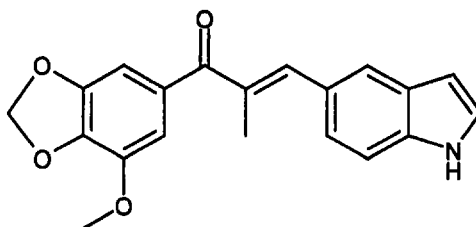
in the form of pale yellow crystals, the characteristics of which are as follows:

- melting point (Kofler) = 129°C.
- elemental analysis : % C = 72.10; %H = 5.28; % N =

5

4.06.

Example 17: E-2-Methyl-3-(1-H-indol-5-yl)-1-(3-methoxy-4,5-methylenedioxyphenyl)propenone



- 10 Step 1: 5 g of 5-indolecarboxaldehyde are dissolved in 90 ml of DMF and 18 ml of DMSO in a 250 ml three-necked flask under an argon atmosphere, and the mixture is then cooled to 0°C. 2.06 g of 60% sodium hydride in oil are then added portionwise and stirring is then
- 15 continued while allowing the mixture to return to room temperature, until the evolution of gas has ceased. 8.6 g of (2-trimethylsilylethyl)oxymethyl chloride are then added dropwise and the mixture is then stirred for 20 hours at room temperature. The reaction medium is
- 20 then poured into a mixture of 300 ml of water and 100 g of crushed ice, and then extracted 3 times with 150 ml of ethyl acetate. The combined organic phases are washed with saturated aqueous sodium chloride solution, dried over magnesium sulfate and concentrated to

dryness under reduced pressure. The brown oil obtained is purified by flash chromatography on silica gel (70-230 mesh), eluting with a mixture of cyclohexane and ethyl acetate (70/30 by volume) to give 9 g of 1-(2-trimethylsilylethyl)oxymethylindole-5-carboxaldehyde in the form of an orange-colored oil, which is used without further modification in the following step.

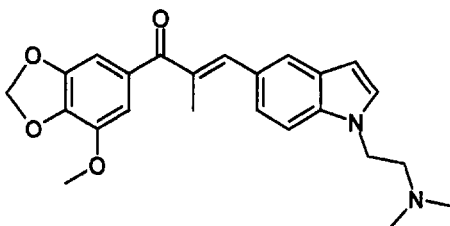
Step 2: The process is performed as in step 1 of example 1, but starting with 2.1 g of 1-(3-methoxy-4,5-methylenedioxyphenyl)propanone - which may be prepared according to J. Org. Chem. 1981, 46(14), 2969-71 - and 2.76 g of 1-(2-trimethylsilylethyl)oxymethylindole-5-carboxaldehyde in 100 mL of ethanol containing 2 mL of piperidine and 1 mL of acetic acid, by refluxing for 96 hours. After purification by flash chromatography on silica gel (70-230 mesh), eluting with a mixture of cyclohexane and ethyl acetate (70/30 by volume), followed by crystallization from diisopropyl ether, 2 g of pure E-2-methyl-3-[1-(2-trimethylsilylethyl)-oxymethyl-1-H-indol-5-yl]-1-(3-methoxy-4,5-methylenedioxyphenyl)propenone are obtained in the form of white crystals, the characteristics of which are as follows:

- melting point (Kofler) = 90°C

Step 3: 2 g of E-2-methyl-3-[1-(2-trimethylsilylethyl)oxymethyl-1-H-indol-5-yl]-1-(3-methoxy-4,5-methylenedioxyphenyl)propenone are dissolved in 42 mL of THF, followed by addition of 4.3 mL of a 1M solution of tetra-N-butylammonium fluoride in THF, and the

mixture is refluxed for 20 hours. After concentration
 under reduced pressure, the reaction medium is taken up
 in 75 ml of ethyl acetate and 75 ml of water. The
 organic phase is separated out after settling of the
 5 phases, washed with water, dried over magnesium sulfate
 and concentrated to dryness under reduced pressure. The
 red oil obtained is purified by flash chromatography on
 silica gel (70-230 mesh), eluting with a mixture of
 cyclohexane and ethyl acetate (70/30 by volume),
 10 followed by recrystallization from isopropanol, to give
 420 mg of pure E-2-methyl-3-(1-H-indol-5-yl)-1-(3-
 methoxy-4,5-methylenedioxyphenyl)propenone in the form
 of a beige-colored solid, the characteristics of which
 are as follows:
 15 - melting point (Kofler) = 140°C

**Example 18: E-2-Methyl-3-[1-(2-dimethylaminoethyl)-1-H-
 indol-5-yl]-1-(3-methoxy-4,5-methylenedioxyphenyl)-
 propenone**

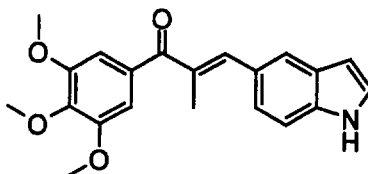


20 336 mg of E-2-methyl-3-(1-H-indol-5-yl)-1-(3-methoxy-
 4,5-methylenedioxyphenyl)propenone, obtained in example
 17, are dissolved in 10.5 ml of pyridine in a 250 ml
 three-necked flask under an argon atmosphere, the
 25 solution is then cooled to 0°C and 90 mg of 60% sodium

hydride in oil are added. After stirring for 1 hour at room temperature, the mixture is again cooled to 0°C and 144 mg of (2-chloroethyl)dimethylamine hydrochloride are added dropwise. The mixture is then maintained at 5 60°C for 5 hours. After concentration under reduced pressure, the reaction medium is taken up in 50 ml of ethyl acetate, washed with water, dried over magnesium sulfate and concentrated to dryness under reduced pressure. The yellow-brown foam obtained is purified by 10 flash chromatography on silica gel (70-230 mesh), eluting with a mixture of methanol and dichloromethane (2/98 by volume), followed by crystallization from diisopropyl ether, to give 400 mg of pure E-2-methyl-3-[1-(2-dimethylaminoethyl)-1-H-indol-5-yl]-1-(3-methoxy-15 4,5-methylenedioxyphenyl)propenone in the form of a beige-colored solid, the characteristics of which are as follows:

- melting point (Kofler) = 118°C

20 **Example 19: E-2-Methyl-3-(1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone**



Step 1 : The process is performed as in step 1 of example 1, but starting with 2.24 g of 1-(3,4,5-trimethoxyphenyl)propanone and 2.76 g of 1-tert-butylloxycarbonylindole-5-carboxaldehyde - which may be 25

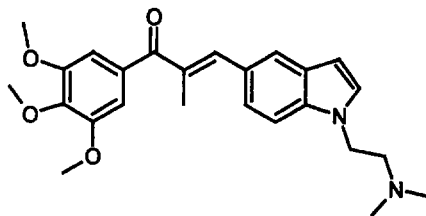
prepared according to J. Org. Chem. 2002, 67(17), 6256-59 - in 100 mL of ethanol containing 2 mL of piperidine and 1 mL of acetic acid, by refluxing for 48 hours. After purification by flash chromatography on silica
5 gel (70-230 mesh), eluting with a mixture of cyclohexane and ethyl acetate (70/30 by volume), 2.2 g of pure E-2-methyl-3-[1-(1-tert-butyloxycarbonyl-1-H-indol-5-yl)]-1-(3,4,5-trimethoxyphenyl)propenone are obtained in the form of a pale yellow oil, which is
10 used without further modification in the following step.

Step 2: 0.7 g of E-2-methyl-3-[1-(1-tert-butyloxycarbonyl-1-H-indol-5-yl)]-1-(3,4,5-trimethoxyphenyl)propenone is dissolved in 15 ml of THF. 1.5 ml
15 of methanol and 0.25 g of sodium methoxide are then added successively and the mixture is then stirred for 18 hours at room temperature. After concentration under reduced pressure, the reaction medium is taken up in 75 ml of ethyl acetate and 35 ml of water. The organic
20 phase is separated out after settling of the phases, washed with water, dried over magnesium sulfate and concentrated under reduced pressure. After purification by flash chromatography on silica gel (70-230 mesh), eluting with a mixture of dichloromethane and
25 diisopropyl ether (50/50 by volume), 505 mg of pure E-2-methyl-3-(1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone are obtained in the form of an orange-

colored oil, the characteristics of which are as follows:

- mass spectrum (EI): $m/z = 351$.
- elemental analysis: % C = 71.26; %H = 6.54; % N = 3.72.

Example 20: E-2-Methyl-3-[1-(2-dimethylaminoethyl)-1-H-indol-5-yl]-1-(3,4,5-trimethoxyphenyl)propenone hydrochloride



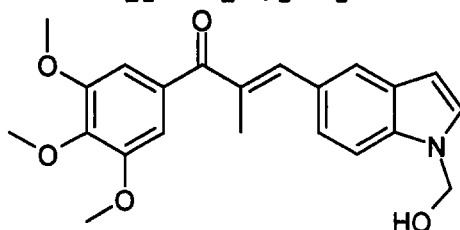
The process is performed as in example 18, but starting with 350 mg of 2-methyl-3-(1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone, obtained in example 19, 90 mg of 60% sodium hydride in oil and 143 mg of (2-chloroethyl)dimethylamine hydrochloride in 10 ml of pyridine. After purification by flash chromatography on silica gel (70-230 mesh), eluting with a mixture of ethanol and dichloromethane (5/95 by volume), 150 mg of pure E-2-methyl-3-[1-(2-dimethylaminoethyl)-1-H-indol-5-yl]-1-(3,4,5-trimethoxyphenyl)propenone in the form of a yellow oil. This oil is redissolved in 2.5 ml of diethyl ether, followed by addition of 0.4 ml of a 1M solution of hydrochloric acid in diethyl ether, and the mixture is left to crystallize for 20 hours. After filtration, washing with diethyl ether and drying under

reduced pressure in the presence of phosphorus pentoxide, 120 mg of E-2-methyl-3-[1-(2-dimethylaminoethyl)-1-H-indol-5-yl]-1-(3,4,5-trimethoxyphenyl)-propenone hydrochloride are obtained in the form of pink-beige crystals, the characteristics of which are as follows:

- melting point (Kofler) = 127°C

- elemental analysis: % C = 65.17; %H = 7.09 ; % N = 5.68 ; %Cl = 7.88.

10 **Example 21: E-2-Methyl-3-(1-hydroxymethyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone**



2.5 ml of an aqueous 37% formaldehyde solution and then 0.55 ml of aqueous 1N sodium hydroxide solution are successively added to a solution of 176 mg of E-2-methyl-3-(1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)-propenone, obtained in example 19, in 3 ml of ethanol. After stirring for 20 hours at room temperature, 25 ml of water are added to the suspension obtained, and the mixture is extracted 3 times with 15 ml of ethyl acetate. The combined organic phases are washed with water, dried over magnesium sulfate and concentrated under reduced pressure. After purification by recrystallization from ethyl acetate, 35 mg of pure E-2-methyl-3-(1-hydroxymethyl-1-H-indol-5-yl)-1-(3,4,5-

trimethoxyphenyl)propenone are obtained in the form of beige-colored crystals, the characteristics of which are as follows:

- melting point (Kofler) = 185°C
- 5 - elemental analysis: % C = 69.13 ; %H = 6.14; % N = 3.36.

BIOLOGICAL RESULTS

Example N°	Tubulin: inhibition of polymer- ization IC ₅₀ (μM)	Inhibition of cell prolifer- ation IC ₅₀ (μM)		Percentage of detachment of HDMEC cells induced with the compound cited in the example at a concentration of:			C51 colon tumor necrosis in vivo
		HDMEC	HeLa	1 μM	0.3 μM	0.1 μM	
1	0.3	0.0025 - 0.0032	0.0036 - 0.0043	37 - 42	18 - 38	21 - 36	Grade 5 at 24.5 mg/kg
2	2.5	0.0019 - 0.0040	0.039 - 0.104	31 - 49	17 - 32	16 - 21	Grade 5 at 50 mg/kg
3	0.5	< 0.019	< 0.019	34	37	31	nd
4	0.6	nd	nd	nd	nd	nd	nd
5	0.7	0.03	0.005 - 0.01	32	nd	nd	Grade 5 at 25 mg/kg
6	0.8	0.017 - 0.02	nd	28	nd	nd	Grade 5 at 50 mg/kg
7	2.0	0.3 - 0.5	nd	nd	nd	nd	nd
8	0.8	nd	nd	nd	nd	nd	nd
9	3.5	nd	nd	nd	nd	nd	nd
10	np	0.207 - 0.225	nd	36	nd	nd	Grade 5 at 25 mg/kg
11	np	0.4	nd	nd	nd	nd	nd
12	nr	0.32	nd	nd	nd	nd	nd
13	10 (np)	0.03	0.1	31	nd	nd	Grade 5 at 12.5 mg/kg
14	25 (np)	0.01	nd	36	nd	nd	Grade 5 at 25 mg/kg
15	9 (np)	0.03 - 0.06	nd	nd	nd	nd	nd
16	0.5	nd	nd	nd	nd	nd	nd

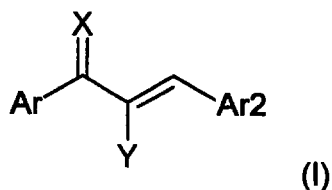
17	0.8	nd	nd	nd	nd	nd	nd
18	2.0	nd	nd	nd	nd	nd	nd
19	0.8	nd	nd	nd	nd	nd	nd
20	2.0	nd	nd	nd	nd	nd	nd
21	0.5	nd	nd	nd	nd	nd	nd

nd : not determined

np: not pertinent

CLAIMS

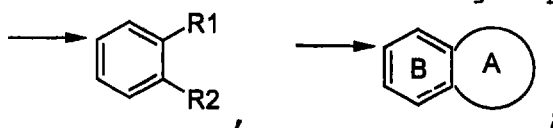
1. A product corresponding to formula (I) below:



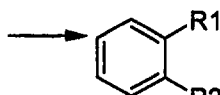
5 in which:

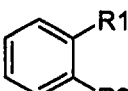
- a) Y is selected from the group consisting of halogen, C₁-C₇ linear alkyl, C₁-C₇ branched alkyl, substituted C₁-C₇ linear alkyl, substituted C₁-C₇ branched alkyl, cycloalkyl, substituted cycloalkyl, NH₂, NH(R₄), N(R₄)₂, aralkyl, substituted aralkyl, COOH, COO(R₄), CONH₂, CONH(R₄), CON(R₄)₂, CN, in which R₄ represents an optionally substituted C₁-C₇ alkyl or cycloalkyl group and, when two radicals R₄ are present, they may be linked together to form a ring;

- b) Ar₂ is selected from the group consisting of:



in which:



- 20 1) when Ar₂ is  , then one of the radicals R₁ and R₂ is selected from the group consisting of NH₂, NH₂·HZ, NHC(O)-amino acid, NH-(GP); N=(GP); in which the amino acid is

preferably serine; in which GP is a metabolizable substituent allowing the functional group to be changed:

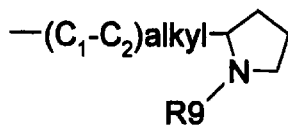


5 and in which HZ is an organic or mineral acid; and

the other radical R1 or R2 is selected from the group consisting of CH₃, C₂H₅, OCH₃, OC₂H₅, SCH₃, NH(R5), N(R5)₂, N(R5)(GP), N(R5)C(O)-
 10 amino acid, in which R5 represents a C₁-C₂ alkyl group and, when two radicals R5 are present, they may be linked together to form a ring;



2) when Ar2 is , then A is a 5- or
 15 6-membered heterocycle, fused to a benzene ring B, said heterocycle A is aromatic or non-aromatic, comprising one or two hetero atoms, at least one of which is a nitrogen atom linked directly to B and bearing a side chain R8, in which R8 is chosen from the
 20 group consisting of H, (C₁-C₃)alkyl, (C₁-C₃)alkyl-OH, (C₁-C₃)alkyl-O(C₁-C₃)alkyl, (C₁-C₃)alkyl-NH₂, (C₁-C₃)alkyl-NH(R7), (C₁-C₃)alkyl-N(R7)₂,



, in which R_9 is chosen from H, $(C_1-C_3)\text{alkyl}$, in which each R_7 independently represents a $(C_1-C_3)\text{alkyl}$ or $(C_3-C_7)\text{ cycloalkyl}$ group, or alternatively, when two radicals R_7 are present, they are linked together to form a 5-membered heterocycle;

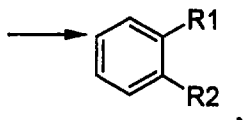
- c) X is selected from the group consisting of O, NOH, NO(R_3), in which R_3 is selected from the group consisting of H, C_1-C_7 linear alkyl, C_1-C_7 branched alkyl, cycloalkyl, C_1-C_7 linear haloalkyl, C_1-C_7 branched haloalkyl, substituted cycloalkyl, halocycloalkyl, aralkyl, substituted aralkyl; and
- d) Ar is selected from the group consisting of 2,5-dimethoxyphenyl, 2,3,4-trimethoxyphenyl, 3,4,5-trimethoxyphenyl, 2,3,5-trimethoxyphenyl, 2,4,5-trimethoxyphenyl, 2,3,4,5-tetramethoxyphenyl, 3-methoxy-4,5-methylenedioxy, 3-methoxy-4,5-ethylenedioxy, 2-methoxy-4,5-methylenedioxy, 2-methoxy-4,5-ethylenedioxy, 2-methoxy-3,4-methylenedioxy and 2-methoxy-3,4-ethylenedioxy radicals.

2. The product as claimed in claim 1, characterized in that X is oxygen.

3. The product as claimed in claims 1 or 2, characterized in that Ar is 3,4,5-trimethoxyphenyl or 3-methoxy-4,5-methylenedioxy.

4. The product as claimed in claims 1, 2 or 3, characterized in that Y is selected from the group consisting of Cl, Br, CH₃ and CH₂CH₃.

5. The product as claimed in any one of claims 1 to 4, characterized in that Ar₂ is

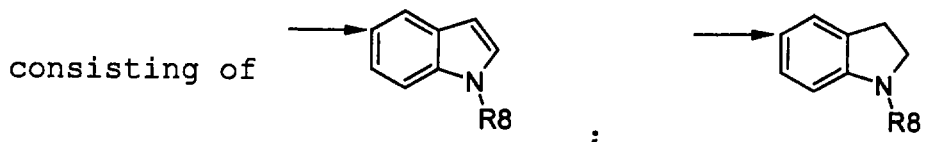


6. The product as claimed in claim 5, characterized in that R₁ and R₂ are selected from the group of combinations (R₁, R₂) consisting of, respectively, (NH₂, OCH₃), (NH₂, OC₂H₅), (NH₂, N(R₅)₂), (N(R₅)₂, OCH₃), (N(R₅)₂, OC₂H₅), (N(R₅)₂, NH₂), (OCH₃, NH₂), (OC₂H₅, NH₂).

7. The product as claimed in any one of claims 1 to 4, characterized in that Ar₂ is



8. The product as claimed in claim 7, characterized in that Ar₂ is selected from the group



9. The product as claimed in claim 8, characterized in that R₈ is chosen from methyl, hydroxymethyl and 2-dimethylaminoethyl groups.

10. The product as claimed in claim 1, characterized in that it is chosen from the group consisting of

- E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone;
- E-3-(4-Amino-3-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone;
- E-3-(3-Amino-4-methoxyphenyl)-2-methyl-1-(2,5-dimethoxyphenyl)propenone hydrochloride;
- 10 E-3-(3-Amino-4-methoxyphenyl)-2-bromo-1-(3,4,5-trimethoxyphenyl)propenone;
- E-2-Methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone;
- E-2-Methyl-3-(1-methyl-2,3-dihydro-1-H-indol-5-yl)-1-
- 15 (3,4,5-trimethoxyphenyl)propenone;
- E-2-Methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenoneoxime;
- E-2-Methyl-3-[1-(2-dimethylaminoethyl)-1-H-indol-5-yl]-1-(3,4,5-trimethoxyphenyl)propenone hydrochloride;
- 20 E-2-Methyl-3-(1-hydroxymethyl-1-H-indol-5-yl)-1-(3,4,5-trimethoxyphenyl)propenone;
- E-2-Methyl-3-(1-methyl-1-H-indol-5-yl)-1-(3-methoxy-4,5-methylenedioxyphenyl)propenone;
- E-2-Methyl-3-[1-(2-dimethylaminoethyl)-1-H-indol-5-yl]-
- 25 1-(3-methoxy-4,5-methylenedioxyphenyl)propenone;
- (S)-2,6-Diaminohexanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide dihydrochloride;

3-(3-[N- ω -nitro-L-arginineamido]-4-methoxyphenyl)-2-methyl-1-(3,4,5-trimethoxyphenyl)propenone;
 Aminoacetic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide hydrochloride;
 5 (S)-2-amino-3-hydroxypropanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]-phenyl}amide hydrochloride;
 1-methylpyrrolidine-2-carboxylic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]-
 10 phenyl}amide hydrochloride.

11. The product as claimed in any one of claims 1 to 5, characterized in that one of the radicals R1 and R2 is NHC(O)-amino acid, and in that the amino acid is selected from natural amino acids and
 15 unnatural amino acids.

12. The product as claimed in claim 11, characterized in that the amino acid is chosen from glycine, lysine, N-methylproline, serine and N- ω -nitroarginine, and in that the amino acid is in
 20 enantiomerically pure or racemic form, or is enriched in an enantiomer.

13. The product as claimed in any one of claims 1 to 9, characterized in that it is in free or salified form.

25 14. The product as claimed in claim 13, characterized in that it is in salified form.

15. The product as claimed in claim 14, characterized in that the salified form is a hydrochloride.

16. The product as claimed in claim 12,
5 characterized in that it is (S)-2-amino-3-hydroxy-propanoic acid {2-methoxy-5-[2-methyl-3-oxo-3-(3,4,5-trimethoxyphenyl)propenyl]phenyl}amide hydrochloride.

17. A pharmaceutical composition comprising a product as claimed in any one of the preceding
10 claims, in combination with a pharmaceutically acceptable excipient.

18. The pharmaceutical composition as claimed in claim 17, characterized in that it comprises the product as claimed in claim 15.

15 19. The use of a product as claimed in any one of claims 1 to 15, as an agent for inhibiting tubulin polymerization.

20. The use of a product as claimed in any one of claims 1 to 16, to promote the detachment of
20 endothelial cells forming the wall of the blood vessels supplying a tumor.

21. The use of a product as claimed in any one of claims 1 to 16, to promote a tumor necrosis.

22. The use of a product as claimed in any
25 one of claims 1 to 16, for the manufacture of a medicinal product that is useful for treating a pathological condition.

23. The use as claimed in claim 22, in which the pathological condition is cancer.