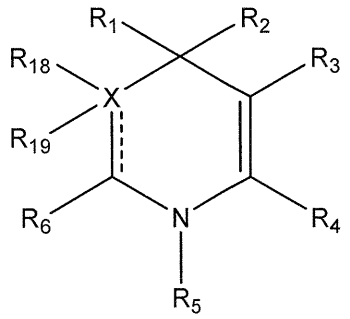
SUMMARY ~~OF INVENTION~~

[0009] The present inventors have postulated that substitution of a cyclic enaminoketone core with a range of groups which are likely to either affect the electron density of the enaminoketone or which will provide additional UV absorbance characteristics themselves will result in extending the absorbance maximum into the UVA range or at least provide a useful variance in absorbance.

[0010] According to a first embodiment ~~aspect~~ of the present disclosure~~invention~~, there is provided a compound of formula I, or a salt thereof:

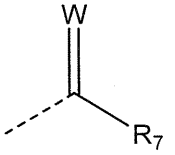


formula I

wherein, the dashed line may represent a bond and X, if present, is one or two carbon atoms forming part of the ring structure;

R_1 and R_2 are independently selected from the group consisting of hydrogen, C_1 to C_{10} alkyl, C_1 to C_{10} alkenyl and C_1 to C_{10} alkoxy, each of which groups may be substituted or unsubstituted;

R_3 is selected from the group consisting of hydrogen, hydroxyl, sulfonyl, substituted or unsubstituted C_1 to C_6 alkyl, substituted or unsubstituted C_1 to C_6 alkenyl, substituted or unsubstituted C_1 to C_6 alkoxy and



wherein W is sulphur or oxygen and R_7 is selected from the group consisting of C_1 to C_{20} alkyl, C_2 to C_{20} alkenyl, C_2 to C_{20} alkynyl, aryl, heteroaryl, aroyl, C_2 to C_{20} alkanone, C_5 to C_7 cycloalkyl, C_4 to C_7 cycloalkanone, C_5 to C_7 cycloalkenyl, C_2 to C_{20} alkanoyl, C_2 to C_{20} alkanoyloxy, C_2 to C_{20} alkoxycarbonyl, C_2 to C_{20} carbamoyl, C_2 to C_{20} carboxyl, haloalkyl, N-alkyl, N-aryl, N-heterocyclyl and heterocyclic all of which groups may be substituted or unsubstituted;

R_4 is selected from the group consisting of hydrogen, C_1 to C_{12} alkyl, C_2 to C_{12} alkenyl, aryl, heteroaryl, C_5 to C_7 cycloalkyl, C_5 to C_7 cycloalkenyl, C_1 to C_{12} alkanoyl, C_1 to C_{12} alkanoyloxy, C_1 to C_{12} carboalkoxy and C_1 to C_{12} alkanone all of which groups may be substituted or unsubstituted;

R_5 is selected from the group consisting of C_1 to C_{12} alkyl, C_2 to C_{12} alkenyl, C_2 to C_{12} alkynyl, aryl, heteroaryl, C_5 to C_9 cycloalkyl, C_5 to C_7 cycloalkenyl, C_2 to C_9 alkanoyl, C_1 to C_{12} alkanoyloxy and carbamoyl all of which groups may be substituted or unsubstituted;

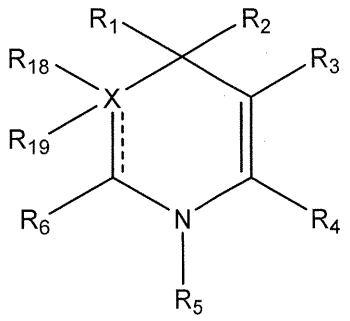
R_6 is selected from the group consisting of hydrogen, oxo, substituted or unsubstituted C_1 to C_6 alkyl, substituted or unsubstituted C_2 to C_6 alkenyl and substituted or unsubstituted C_2 to C_6 alkanoyl;

R_{18} and R_{19} are independently selected from the group consisting of hydrogen, C_1 to C_6 alkyl, C_1 to C_6 alkenyl and C_1 to C_6 alkoxy, each of which groups may be substituted or unsubstituted,

with the proviso that when R_5 is alkyl or cycloalkyl and the dashed line is not a bond and R_4 is hydrogen then R_7 is not an unsubstituted alkyl chain, an ester or an ether; and

when R_5 is unsubstituted benzyl then R_7 is not hexyl.

[0010a] In a first aspect, there is provided a compound of formula I, or a salt thereof:

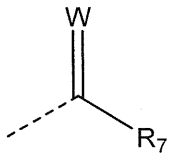


formula I

wherein, the dashed line may represent a bond and X, if present, is one or two carbon atoms forming part of the ring structure;

R_1 and R_2 are independently selected from the group consisting of hydrogen, C_1 to C_{10} alkyl, C_1 to C_{10} alkenyl and C_1 to C_{10} alkoxy, each of which groups may be substituted or unsubstituted;

R_3 is selected from the group consisting of hydrogen, hydroxyl, sulfonyl, substituted or unsubstituted C_1 to C_6 alkyl, substituted or unsubstituted C_1 to C_6 alkenyl, substituted or unsubstituted C_1 to C_6 alkoxy and



wherein W is sulphur or oxygen and R_7 is selected from the group consisting of C_1 to C_{20} alkyl, C_2 to C_{20} alkenyl, C_2 to C_{20} alkynyl, aryl, heteroaryl, aroyl, C_2 to C_{20} alkanone, C_5 to C_7 cycloalkyl, C_4 to C_7 cycloalkanone, C_5 to C_7 cycloalkenyl, C_2 to C_{20} alkanoyl, C_2 to C_{20} alkanoyloxy, C_2 to C_{20} alkoxycarbonyl, C_2 to C_{20} carbamoyl, C_2 to C_{20} carboxyl, haloalkyl, N-alkyl, N-aryl, N-heterocyclyl, N-SO_2-R_{20} and heterocyclic all of which groups may be substituted or unsubstituted and wherein R_{20} is selected from the group consisting of C_1 to C_6 alkyl and phenyl each of which may be substituted or unsubstituted;

R_4 is selected from the group consisting of hydrogen, C_1 to C_{12} alkyl, C_2 to C_{12} alkenyl, aryl, heteroaryl, C_5 to C_7 cycloalkyl, C_5 to C_7 cycloalkenyl, C_1 to C_{12} alkanoyl, C_1 to C_{12} alkanoyloxy, C_1 to C_{12} carboalkoxy and C_1 to C_{12} alkanone all of which groups may be substituted or unsubstituted;

R_5 is selected from the group consisting of C_1 to C_{12} alkyl, C_2 to C_{12} alkenyl, C_2 to C_{12} alkynyl, aryl, heteroaryl, C_5 to C_9 cycloalkyl, C_5 to C_7 cycloalkenyl, C_2 to C_9 alkanoyl, C_2 to C_9 alkanoyloxy and carbamoyl all of which groups may be substituted or unsubstituted;

R_6 is selected from the group consisting of hydrogen, oxo, substituted or unsubstituted C_1 to C_6 alkyl, substituted or unsubstituted C_2 to C_6 alkenyl and substituted or unsubstituted C_2 to C_6 alkanoyl; and

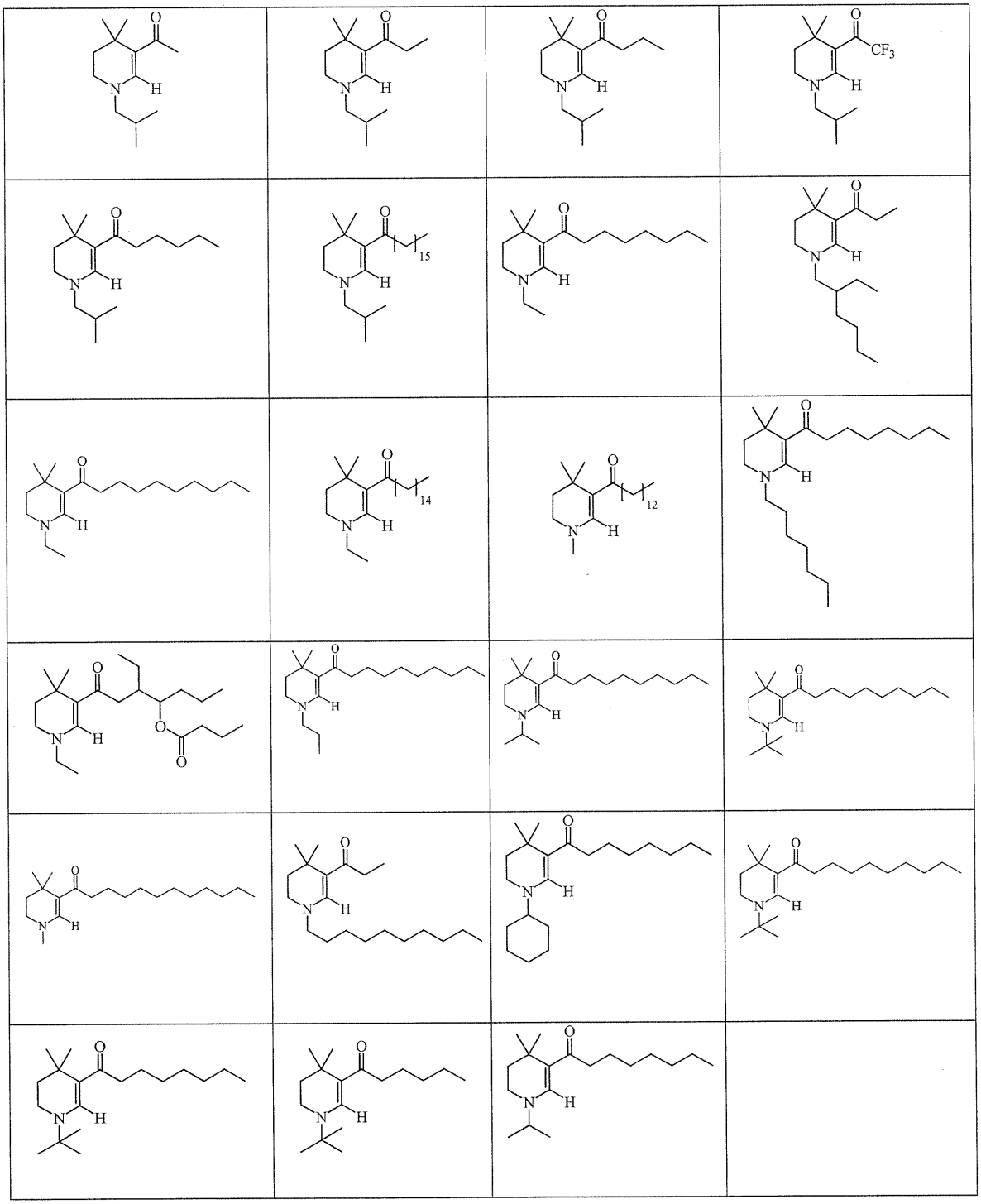
R_{18} and R_{19} are independently selected from the group consisting of hydrogen, C_1 to C_6 alkyl, C_1 to C_6 alkenyl and C_1 to C_6 alkoxy, each of which groups may be substituted or unsubstituted,

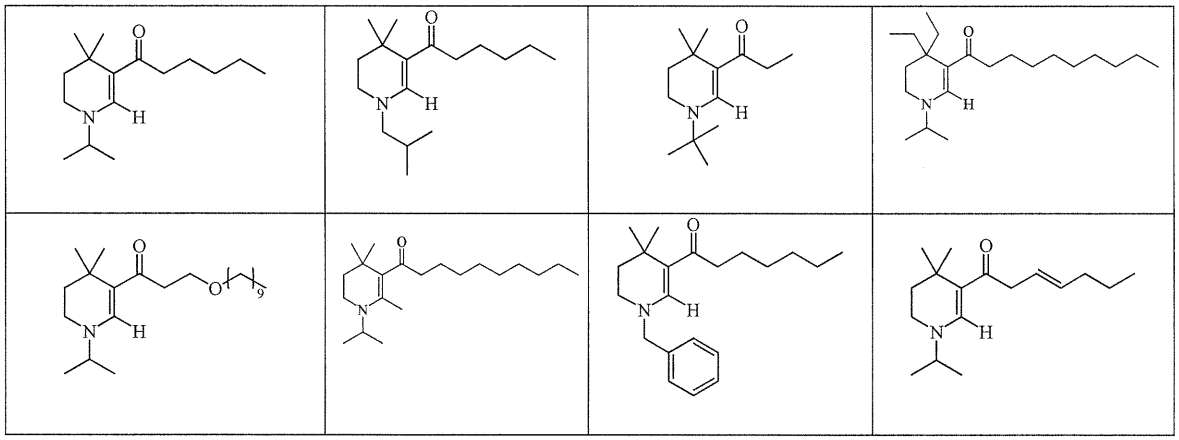
with the proviso that when R_5 is alkyl or cycloalkyl and the dashed line is not a bond and R_4 is hydrogen then R_7 is not an unsubstituted alkyl chain, an ester or an ether; and

when R_5 is unsubstituted benzyl then R_7 is not hexyl.

[0011] In one embodiment, the compound ~~of the first aspect~~ is a non-naturally occurring compound.

[0012] In one embodiment, the compound ~~of the first aspect~~ is not a compound selected from the group consisting of:





[0013] According to a second aspect of the present ~~invention~~ disclosure there is provided a composition comprising a compound of formula I, or a salt thereof, and a suitable carrier.

[0014] A third aspect of the present disclosure~~invention~~ resides in the use of a compound of formula I, or a salt thereof, as a UV absorbing compound.

[0015] A fourth aspect of the present disclosure~~invention~~ resides in a method of protecting a surface or tissue from UV rays including the step of applying a compound of the first aspect to the surface or tissue.

[0016] The various features and embodiments of the present disclosure~~invention~~, referred to in individual sections above apply, as appropriate, to other sections, *mutatis mutandis*. Consequently features specified in one section may be combined with features specified in other sections as appropriate.

[0017] Further features and advantages of the present disclosure~~invention~~ will become apparent from the following detailed description.

DETAILED DESCRIPTION

[0018] The present invention is predicated, at least in part, on the provision of a number of substituted cyclic enamine UV absorbing compounds. The present compounds provide a wide variation in substitution pattern allowing access to a range of absorption capabilities which may prove useful as part of a