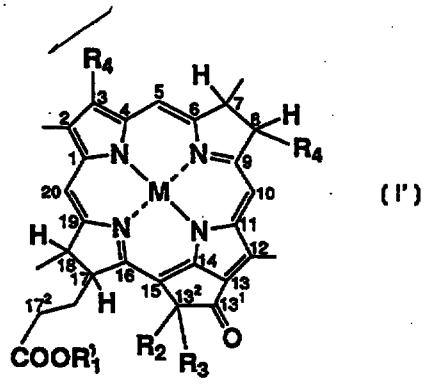
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(I')

(71) Applicant (for all designated States except US): YEDA RESEARCH AND DEVELOPMENT CO. LTD. [IL/IL]; at the Weizmann Institute of Science, P.O. Box 95, 76100 Rehovot (IL).

(72) Inventors; and
(75) Inventors/Applicants (for US only): SCHERZ, Avigdor [IL/IL]; 4 Tor Ha'aviv Street, 76329 Rehovot (IL). SALOMON, Yoram [IL/IL]; 43B Gordon Street, 76287 Rehovot (IL). SCHEER, Hugo [DE/DE]; Ortsstrasse 17, D-87662 Bionhofer (DE). HARTWICH, Gerhard [DE/DE]; Wolfgangstrasse 23, D-81667 München (DE). BRANDIS, Alexander [IL/IL]; 11/3 Be'eri Street, 76352 Rehovot (IL).

(74) Agent: BEN-AMI, Paulina; Yeda Research and Development Co. Ltd., at the Weizmann Institute of Science, P.O. Box 95, 76100 Rehovot (IL).

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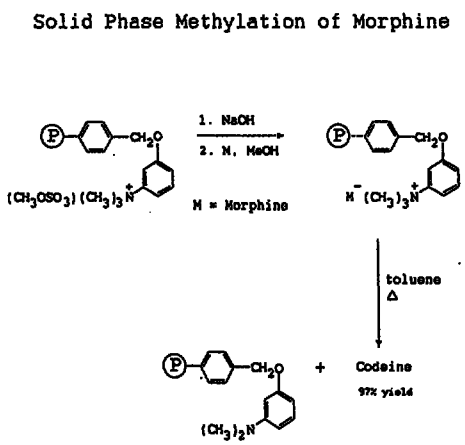
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(57) Abstract

Metalated bacteriochlorophylls of the formula [M]-BChl, wherein M is a metal atom selected from divalent Pd, Co, Ni, Cu, Zn and Mn, trivalent Fe, Mn and Cr, and tetravalent Sn and Pt, and Bchl represents the residue of a demetalated natural or synthetic bacteriochlorophyll derivative, are prepared by transmetalation of the corresponding [Cd]-BChl derivatives carrying at position 17^3 a group $COOR_1$, wherein R_1 is a C_1 - C_{25} hydrocarbyl residue, and further optional transesterification of the 17^3-$COOR_1$ of the obtained [M]-BChl. The compounds are for use in photodynamic therapy and diagnosis and for killing cells and infectious agents, e.g. bacteria and viruses, both in biological products and in living tissue. Preferred compounds are those of formula (I') wherein R'_1 is a residue selected from (i) optionally substituted hydrocarbyl; (ii) hydroxy-containing amino acid or peptide or a derivative thereof; and (iii) hydroxy-containing peptide or a cell-specific ligand, e.g. peptide or protein, linked to the COO-group via a spacer as defined in (i).

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(54) Title: SOLID-PHASE SYNTHESIS OF CODEINE FROM MORPHINE



(71) Applicant (for all designated States except US): THE BOARD OF REGENTS OF THE UNIVERSITY AND COMMUNITY COLLEGE SYSTEM OF NEVADA on behalf of THE UNIVERSITY OF NEVADA-RENO [US/US]; University of Nevada-Reno, Reno, NV 89557 (US).

(72) Inventors; and
(75) Inventors/Applicants (for US only): CORCORAN, Robert, C. [US/US]; P.O. Box 3112, Laramie, WY 82071 (US). MA, Junning [CN/US]; Building 18, Apartment B7, 700 Lower State Road, North Wales, PA 19454 (US).

(74) Agents: GAYBRICK, Robert, J. et al.; Morgan, Lewis & Bockius L.L.P., 1800 M Street, N.W., Washington, DC 20036 (US).

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(57) Abstract

The specification describes a methylation resin comprising methyl(dialkyl)anilinium salts or methyl(diaryl)anilinium salts covalently bonded to the resin. The methylation resin is used in the solid-phase synthesis of codeine from morphine. Accordingly, the specification describes a process for methylating morphine to form codeine by loading morphine onto a methylation resin comprising methyl(dialkyl)anilinium salts or methyl(diaryl)anilinium salts covalently bonded to the resin; contacting the loaded resin with sufficient hydrocarbon or ether solvent to cover the loaded resin; and heating the loaded resin in the hydrocarbon or ether solvent under sufficient conditions to form codeine. The methylating resin may be used to methylate phenolic moieties on other compounds and to esterify compounds containing carboxylic acid moieties.