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(21) International Application Number: PCT/GB97/01748 (22) International Filing Date: 26 June 1997 (26.06.97) (30) Priority Data: 9613722.9 28 June 1996 (28.06.96) GB (71) Applicant (for all designated States except US): THE UNIVERSITY OF LIVERPOOL (GB/GB); Senate House, Abercromby Square, Liverpool L69 3BX (GB). (72) Inventors; and (75) Inventors/Applicants (for US only): GALLAGHER, James, Anthony (GB/GB); 12 Chetwood Avenue, Crosby L23 2UX (GB). MOORE, Jonathan, Paul, Granville (GB/GB); 8 Links Close, Churston Ferrers, Brixham, Devon TQ5 0JT (GB). BOWLER, Wayne, Barry (GB/GB); 52 Town Row, West Derby, Liverpool L12 5HQ (GB). PAGE, Philip, Charles, Bulman (GB/GB); 203 Forest Road, Loughborough, Leicestershire LE11 3HS (GB). (74) Agent: SKAILES, Humphrey, John; Frank B Dehn & Co., 179 Queen Victoria Street, London EC4V 4EL (GB).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>
(54) Title: STEROID BISPHOSPHONATES (A) (57) Abstract Bisphosphonate derivatives of hydroxy steroids which are bone resorption inhibitors or bone formation stimulators, the derivatives having at least one group A in place of a hydroxy group on the steroid molecule, where A is a group of formula (A) where X is: (i) St-O-CO- where St is the residue of the hydroxy steroid given by removal of an OH group; (ii) R¹-O-CO- where R¹ is an alkyl, alkenyl, cycloalkyl, aralkyl or aryl group, any of which may optionally be substituted; or (iii) a hydrogen atom, and the salts and solvates of these compounds. The steroid is typically 17β-oestradiol, oestrone, testosterone, norethindrone, androsterone, norethandrolone or nandrolone. The derivatives can be used in the treatment of bone disorders such as osteoporosis.		