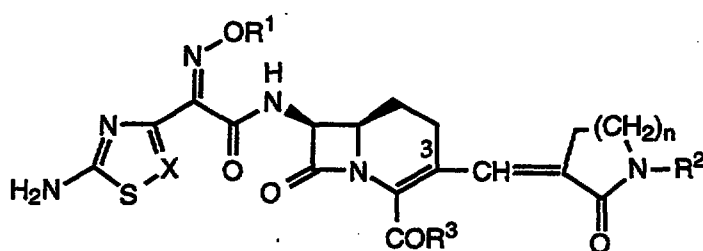


RAN 4410/255

Abstract

1-carba-(dethia)-cephalosporin derivatives of the general formula I



I

wherein

 R^1

is hydrogen, optionally fluoro substituted lower alkyl, aralkyl, cycloalkyl, $-\text{COR}^4$ or $-\text{C}(\text{R}^5\text{R}^6)\text{CO}_2\text{R}^7$ $-\text{C}(\text{R}^5\text{R}^6)\text{CONHR}^7$; where R^5 and R^6 are each independently hydrogen or lower alkyl, or R^5 and R^6 taken together form a cycloalkyl group; R^4 is hydrogen or lower alkyl and R^7 is hydrogen, lower alkyl, lower alkenyl or a carboxylic acid protecting group;

 R^2

is hydrogen, hydroxy, lower alkyl- Q_m , cycloalkyl, lower alkoxy, lower alkenyl, cycloalkenyl, lower alkynyl, aralkyl- Q_m , aryl- Q_m , aryloxy, aralkoxy, a heterocyclic ring or heterocyclyl lower alkyl, the lower alkyl, cycloalkyl, lower alkoxy, lower alkenyl, cycloalkenyl, lower alkynyl, aralkyl, aryl, aryloxy, aralkoxy and the heterocyclic ring being unsubstituted or substituted with at least one group selected from carboxy, amino, nitro, cyano, optionally fluoro substituted lower alkyl, lower alkoxy, hydroxy, halogen, $-\text{COR}^6$, $-\text{C}(\text{R}^5\text{R}^6)\text{CO}_2\text{R}^7$, $-\text{C}(\text{R}^5\text{R}^6)\text{CONR}^5\text{R}^8$, $-\text{CONR}^5\text{R}^6$, $-\text{N}(\text{R}^6)\text{COOR}^{10}$, $\text{R}^6\text{OCO}-$ or $\text{R}^6\text{COO}-$ where R^5 and R^6 are hydrogen or lower alkyl; R^7 is hydrogen, lower alkyl, lower alkenyl or a carboxylic acid protecting group; R^8 is hydrogen, lower alkyl or



- optionally substituted phenyl; R^{10} is lower alkyl, lower alkenyl or a carboxylic acid protecting group;
- Q is -CHR-, -CO- or -SO₂;
- R is hydrogen or lower alkyl
- 5 R³ is hydroxy, -O-, lower alkoxy, -OM and M represents an alkali metal;
- m is 0 or 1;
- n is 0, 1 or 2;
- X is CH or N
- 10 as well as readily hydrolysable esters thereof, pharmaceutically acceptable salts of said compounds and hydrates of the compounds of formula I and of their esters and salts.