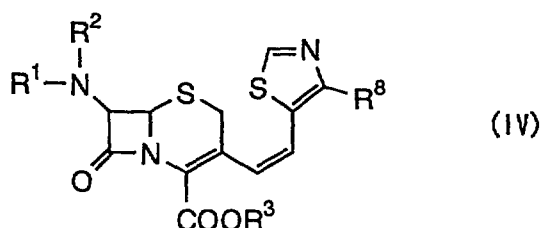


ABSTRACT

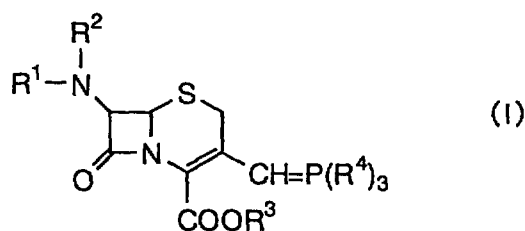
There can be produced, at a high selectivity and in a high yield, the Z-isomer of a 7-N-unsubstituted or substituted-amino-3-[2-(4-substituted or unsubstituted-thiazol-5-yl) vinyl]-3-cephem-4-carboxylic acid or an ester thereof having the general formula (IV)



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wherein R^1 denotes a hydrogen atom, a mono-valent amino-protecting group or a 2-(2-N-protected or unprotected aminothiazol-4-yl)-2-alkoxyiminoacetyl group, R^2 denotes a hydrogen atom, or R^1 and R^2 as taken together mean one di-valent amino-protecting group, R^3 denotes a hydrogen atom, pivaloyloxymethyl group or a carboxyl-protecting group and R^8 denotes an alkyl group and so on, by a process comprising reacting a 7-N-unsubstituted or substituted-amino-3-[(tri-substituted-phosphoranylidene) methyl]-3-cephem-4-carboxylic acid or an ester thereof having the general formula (I)

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wherein R^1 , R^2 and R^3 each have the same meanings as defined above, and R^4 denotes a lower alkyl group or an aryl group,

with a 4-substituted or unsubstituted-thiazol-5-carbaldehyde in a mixed solvent consisting of a mixture of one or more chlorinated hydrocarbon solvent(s) with one or more lower alkanol(s) at a low temperature of +5 °C or below.

5 According to the processes of this invention, the production of such E-isomer of the compound (IV) that is of lower antibacterial activity than that of the Z-isomer can be suppressed remarkably. Further, the Z-isomer of a high purity can be produced efficiently in a facile way.

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