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(54) Title: ENZYMATIC METHOD FOR THE PRODUCTION OF L-GLUFOSINATE P-ALKYL ESTERS

(57) Abstract: The present invention relates in a first aspect to an enzymatic method for the production of an L-glufosinate P-alkyl ester. This method is characterized by a step (c) in which an L-glufosinate P-alkyl ester carbamoylate is reacted to give the corresponding L-glufosinate P-alkyl ester. This step (c) is catalyzed by a carbamoylase, preferably by an L-enantioselective carbamoylase. The L-glufosinate P-alkyl ester carbamoylate employed in step (c) may be obtained by reaction from the corresponding L-glufosinate hydantoin P-alkyl ester. This optional, antecedent step (b) is catalyzed by a hydantoinase, preferably an L-enantioselective hydantoinase. Even more preferred, the L-glufosinate hydantoin P-alkyl ester employed in step (b) may be obtained by reaction from the corresponding D-glufosinate hydantoin P-alkyl ester. This optional, antecedent step (a) is preferably catalyzed by a hydantoin racemase. In a second aspect, the present invention relates to an enzymatic method for enantioselective production of an L-glufosinate P-alkyl ester from a mixture M<sub>IIIA</sub> of L- and D-glufosinate P-alkyl ester hydantoins. In the method according to the second aspect of the invention, the mixture M<sub>IIIA</sub> is provided in a step (i-A) and employed in steps (ii) and (iii). Steps (ii) and (iii) correspond to steps (b) and (c) described above, respectively, wherein in step (c), an L-carbamoylase is employed. In an optional, preferred step (i-B) of the method according to the second aspect of the invention, corresponding to preferred step (a) described above, a hydantoin racemase is preferably used to convert at least a part of the D-glufosinate P-alkyl ester hydantoin in the mixture M<sub>IIIA</sub> into its corresponding L-enantiomer, giving a mixture M<sub>IIIB</sub>, which is then employed in steps (ii) and (iii). The L-glufosinate P-alkyl ester obtained in the methods according to the first or second aspect of the invention may be saponified to give L-glufosinate.

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