



Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering

Process for preparing the product 2,4-dichlorophenoxy-amidopropylene-amido biotin acid

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Abstract

The invention relates to a process for preparing the product 2,4-dichlorophenoxy-amidopropylene-amido biotin acid to be used as a marker in the immuno-chemical technique for dosing the pesticide 2,4-dichlorophenoxyacetic acid in biological and environmental samples.

The process consists in:

- dissolving biotin N-hydroxysuccinimide ester in dimethyl sulfoxide,
- the resulting solution being then admixed to a solution of 1,3-diamino-propane dissolved in a sodium carbonate buffer to form the biotin-amidopropylene amine derivative,
- the biotin-amidopropylene is purified and admixed, in a volume of pesticide mixture activated with N-hydroxysuccinimide and 1-ethyl-3(3'diaminopropylcarbodiimide) to result the product 2,4-dichlorophenoxy-amidopropylene-amido biotin acid,
- after purification, the product 2,4-dichlorophenoxy-amidopropylene-amido biotin acid is stored in ethyl alcohol, at a temperature of -20 degrees C, in order to use it in the immunochemical technique for dosing the 2,4-dichlorophenoxy acid.

2,4-D ($C_8H_6Cl_2O_3$) is an herbicide used in agriculture to control and destroy of the weeds that can affect agricultural crops. It is used in turf, lawns, rights-of-way, aquatic sites, forestry sites, and a variety of field, fruit and vegetable crops. It may also be used to regulate the growth of citrus plants.

The remaining of this organochlorurate compound in alimentary products, transfer and contamination of the ground water in the areas where this pesticide is used require the analysis of this chemical in order to establish the contamination

level of the alimentary products and the environmental factors (water, soil).

Technology stage

The obtained product, 2,4-dichlorophenoxy-amidopropylene-amido biotin acid can be used in ELISA (enzyme-linked immunosorbent assay) immunochemical technique for dosing the 2,4-D pesticide from environmental samples and it was validated in this technique.

Applications

The obtained product can be used in:

- ELISA immunochemical technique in the homogeneous phase for dosing the pesticide 2,4-dichlorophenoxyacetic acid from biological and environmental samples;
- the field of laboratory medicine;
- environmental quality control.

Derwent Class Codes:

-D16- Fermentation industry - including fermentation equipment, brewing, yeast production, production of pharmaceuticals and other chemicals by fermentation, microbiology, production of vaccines and antibodies, cell and tissue culture and genetic engineering;

-S03- Scientific Instrumentation.

Advantages

- rapid kinetics;
- short time to achieve a chemical equilibrium between the components to enzymatic markers;
- short time of sample analysis.

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