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

The nanoimmunosorbent silicon dioxide-aminopropyltriethoxysilane-glutaraldehyde anti 3,6-dichloro-2-methoxybenzoic acid antibody to be employed in the ELISA technique for dosing the 3,6-dichloro-2-methoxybenzoic acid pesticide
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Abstract

The invention relates to a process for preparing a nanoimmunosorbent as a nanoparticle of silicon dioxide-aminopropyltriethoxysilane-glutaraldehyde anti 3,6-dichloro-2-methoxybenzoic acid antibody, to be used in the ELISA technique.

Technology stage

The obtained product can be used in ELISA immunochemical technique for dosing the dicamba pesticide from environmental samples and it was validated in this technique.

Applications

- ELISA kits for detection of the pesticide 3,6-dichloro-2-methoxybenzoic acid (dicamba) from alimentary and environmental samples which leads to increased quality of life through use of uncontaminated food.
- Environmental protection: quantitative analysis of pesticide

contaminants from environmental factors (soil, water).

- Chemical industry.

Advantages

- coupling covalently the antibody antipesticide nanoparticles of silica taking advantage of a specific surface area larger ($> 200 \text{ m}^2/\text{g}$) as compared to the traditional method (cm^2/g);
- the covalent coupling eliminates the desorption of the antibody of the classical method;
- the decreasing analysis time in homogeneous ELISA technique as compared with classical technique where the antigen antibody reaction is heterogeneous (occurs on the surface of the reaction tube);
- larger specific surface area which causes an increased amount of antibody antipesticide;
- lower sedimentation coefficient of nanoparticles as compared to that of the microparticles which require an centrifugation at increased acceleration for the nanoparticles and higher centrifugation times;

Derwent Class Codes:

- B04**: Natural products and polymers, testing, compounds of unknown structure;
- C06**: Biotechnology, plant genetics, veterinary vaccines;
- D16**: Fermentation industry;
- S03**: Scientific Instrumentation, photometry, calorimetry.

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