Dossier: BIOSENSORS TECHNOLOGY AND APLICATIONS
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INTRODUCTION

Conventional analytical methods for the detection of chemical contaminants involve complex processes highly invasive and expensive, some of these methods include liquid chromatography, gas chromatography and mass spectrometry, among others. These methods are especially useful because they allow to determine the presence of waste chemicals, toxins, allergens, pathogens, antinutrients materials and genetically modified organisms, thus ensuring the quality of processes and services in the environmental, clinical and food areas. Given the importance of these processes and the complexity of traditional methods, at the global level have been explored the advantages of analytical methods based on biosensors, devices whose development and research, date back to the 60's. Initially focused on clinical and biochemical applications, the biosensor technology has expanded its scope to positively impact the food, cosmetics and pharmaceutical industries; environmental monitoring being one of the most benefited areas in recent years. Some of the comparative advantages of the biosensor technology, compared to traditional analytical methods are its speed of response, low cost, portability, simplicity and continuity in time of the signals it produces. While the procurement and marketing of biosensors is still limited, partly due to ignorance of the technology and its application scenarios, scientific production in this field has grown rapidly, generating more than 14,000 articles in recent years, not including the available patents [1].

A biosensor is constituted either by a biological recognition element, a nanomaterial, a smart material, or a biomimetic compound which is associated with a mechanism to ensure the detection and interpretation of changes in optical , physico-chemical, electrical or other properties, obtained from the interaction between the analyte and the analytical device [2,3].

Between the main application areas for biosensors in Colombia, are outlined agriculture and food industry, given that as part of the emerging free trade agreements and to be inserted successfully in the international agricultural and food markets, Colombian industry must adjust its standards to health guidelines required by the international community, which are becoming increasingly strict about the maximum permitted levels of pesticides in products for human consumption. Traditionally, the analysis which evidences these compounds is performed by chromatographic methods, making the process slow, expensive and impractical (since food lose physical, chemical and organoleptic while performing the analysis that would give the approval or disapproval of a lot); For this reason, features like the ability to work in situ obtaining reliable results in real time, make biosensors an innovative instrumental alternative to ensure the quality of delivered product.

In this dossier it is presented a functional description and classification of some types of biosensors, in the same way that are listed some new technological developments in this field and are referenced specific applications for the space and food industries.

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