

### **Researchers at the UJI develop a fluorescent sensor for detecting nitric oxide, a molecule related to many diseases**

The detection of certain chemical compounds in our body is essential to prevent many diseases and set out their treatment. Thus, making advances in the development of compounds that can be easily detected is key for the development of medicine. This is the case of nitric oxide, which is a molecule involved in countless cardiovascular, neurological and immune system processes, among others. The detection of nitric oxide may be executed more efficiently and selectively thanks to a new compound developed by researchers from the Universitat Jaume I (UJI) in Castelló.

The new compounds can detect the presence of nitric oxide by fluorescence. They also have the advantage of being highly selective because they do not interact with other typical substances that can be found in the biological environment. This progress can be very useful to the medical and pharmaceutical industry because nitric oxide is involved in several cellular biochemical processes. For this reason, it is related to pathologies associated with them, i.e.: cancer, Alzheimer, Parkinson, immune disorders, etc. After patenting the results, the group Photochemistry and Sensors—together with the group Sustainable Chemistry at the Universitat Jaume I (UJI)— have commenced a new search phase of industrial partners to transfer molecules to them or to research and develop applications with them.

“The detection of nitric oxide is essential to understand countless biochemical processes; there are many pathologies associated with this molecule that could be potentially detected if we knew a detailed knowledge of its levels”— reported Francisco Galindo, director of the project developed by the Spanish Ministry of Education, which financed the research. The presence of nitric oxide at a biological level is currently being detected by using molecules named “fluorescent probes”; their main problem is that they also interact with other compounds, and that is why false positives can be given. The organic molecules developed by researchers from the UJI can properly interact with nitric oxide; the newest aspect is that they do not interact with other related

species, especially with dehydroascorbic acid (DHA), but it does happen with many current nitric oxide probes.

The developed molecules are obtained by a simple procedure that allows synthesising a large amount of product in a few steps and economically; it is made from commercially accessible products. “Besides, they are highly versatile, which is important when selecting the accurate molecule regarding the excitation source available, either laser or another light source”— explained Galindo.

Once the laboratory phase for synthesising and characterising these compounds is over, the research group is seeking industrial partners to transfer molecules for its commercial exploitation or to work together with them for researching and developing applications. “For instance, as a following step, it will be relevant to manage previous tests at the cellular level to check the potential diagnosis of the new probes”— explained Galindo. Likewise, the lecturer of Organic Chemistry from the UJI stands out: “Given the simplicity of the synthesis of the products and, especially, their minimum amount required for their application, the production could be done in a very short term by any company already established in the chemical sensor field”.

The current results will be part of Alicia Beltrán’s doctoral thesis, who currently holds a pre-doctoral scholarship of the Spanish Ministry of Education in the Department of Inorganic Chemistry at the UJI.