



ra combatir el cáncer

Nanoparticles in the fight against cancer

Cancer is currently one of the most feared diseases of our time, and for good reasons. Cancer is one of the four noninfectious pathologies that cause the most deaths per year in the world. Furthermore, the available treatments are highly invasive and harm other aspects of a patient's health.

Due to this, there are ongoing scientific research searching for new cancer therapy drugs and systems for the controlled release of these drugs. These revolutions would allow patients to fight cancer locally, thereby reducing the collateral effects of treatment.

Among the advances under research is the use of nanoparticles for drug release. Working in this field is Dr. Rolando Martínez, researcher for the Department of Chemistry, Faculty of Exact Sciences at the Universidad Andrés Bello. Together with researchers from Universidad de Valparaíso and Universidad Autónoma de Chile, Dr. Martínez is studying the production of nanostructures from polymeric nanoaggregates, which are formed from amphiphilic copolymers.

"This study encompasses the extraction and synthetic modification of natural compounds from Chile to obtain new drugs with biological activities that have a therapeutic effect against cancer and certain types of fungi," explains Dr. Martínez.

Dr. Martínez highlights that another goal of this Fondecyt-funded project is to solve a problem regarding natural extracts. Specifically, a wide variety of natural compounds with interesting effects against cancer also present issues of water solubility. "To overcome this difficulty, we propose modifying the chemical structure of these compounds using a prodrug focus in which a polar macromolecular chain binds to the drug's structures," states Dr. Martínez.

Finally, Dr. Rolando Martínez emphasizes that the therapeutic use of polymers is a promising technique for designing drug administration systems with different biological applications. In fact, the advances achieved by his research group can be applied not only to cancer, but also in treatments against agricultural pests and salmon aquaculture pathologies.