MICRONEEDLE BIOSENSOR AND REMOTE MONITORING SYSTEM FOR HORMONE TREATMENT

TECNOLOGÍA PATENTADA

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RESUMEN

Researchers from the **University of Alicante** and the ***Technische Universität Dresden*** have developed a biosensor and an intelligent remote monitoring system that provides accurate, real-time information on hormone levels to patients and professionals. In addition, these data, through automatic processing techniques such as Artificial Intelligence or Machine Learning, provide patterns for better treatment of these pathologies.

The group is looking for companies interested in acquiring this technology for commercial exploitation through patent licensing agreements or to continue developing the technology.

VENTAJAS Y ASPECTOS INNOVADORES

MAIN ADVANTAGES OF THE TECHNOLOGY

The main advantages of this technology are as follows:

- It is a **portable and minimally invasive device**, integrated into an adhesive patch. In this way, the person does not have to prick themselves every time they want to take a measurement, thus improving the user's quality of life.
- The **remote and continuous monitoring** of hormone levels provides accurate **information in real time**, thus generating **alerts to warn the patient and the professional of variations**.
- This data collected by the biosensor will allow **personalisation of treatments and hormone therapies**.
- The semiconductor nanomaterials needed for biosensing can be manufactured in flexible polymer films. This results in **lightweight sensors that are more affordable and compatible** with the final handheld device.
- The nanoscopic dimension of the semiconductor material allows **high sensitivity** to chemicals.
- The electronic circuit is powered by a **battery or a wireless power supply system**.
- The information obtained can be viewed by medical staff remotely and via a mobile device such as a Smartphone or Tablet (control unit).

INNOVATIVE ASPECTS

The invention has several innovative aspects that are worth highlighting:

- The biosensor contains a reservoir with an opening in order to **deliver drugs more precisely** according to the clinical needs of the patient.
- The use of modelling and simulation techniques such as **Digital Twins** allows the prediction of a complete scenario of a specific treatment and decision making based on synthetic data from the simulator. In this way, the use of simulation would accelerate the collection of data before the scenario has been implemented, and also allow a first feedback from healthcare experts to the solution.
- The smart microneedle arrays with on-demand sample collection are obtained through **3D printing** using a photoresist.

APLICACIONES DE LA OFERTA

It primarily targets the eHealth sector, more specifically **medical device manufacturing companies**.

COLABORACIÓN BUSCADA

Companies interested in acquiring this technology for **commercial exploitation** through patent licensing agreements or for further development of the technology are sought.