DEVICE FOR CONNECTING A PHARMACEUTICAL VIAL TO A DROPPER BOTTLE FOR PREPARING PHYSIOLOGICAL SOLUTIONS IN A QUICKLY, EASILY AND SAFELY MANNER

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ABSTRACT

The **Joint Research Unit in Biomedical Design and Manufacturing (BioFab)**, consisting of researchers from the University of Alicante and the Alicante Institute for Health and Biomedical Research (ISABIAL), has developed a **device for connecting a pharmaceutical vial to a dropper bottle**, allowing the transfer of substances or components of the medicine, preventing any leakage and ensuring that the solution in the bottle remains sterile. It also facilitates the mixing of materials in different phases, such as freeze-dried powder and liquid. This makes it possible for both pharmacists and users themselves to prepare physiological solutions quickly and easily.

BioFab is looking for **companies that manufacture materials for the pharmaceutical or laboratory sector** and are interested in developing a prototype of the device, validating and exploiting it (through licensing agreements) or designing other new devices.

ADVANTAGES AND INNOVATIVE ASPECTS

MAIN ADVANTAGES OF THE TECHNOLOGY

The numerous advantages of the device are worth highlighting:

- Creation of **sterile physiological solutions** using a sealed system; the mixture obtained is transferred to a dropper bottle ready for use.
- It allows solutions to be created for patients (domestic use), not just for healthcare personnel (clinical use), thus making them **more accessible**.
- It **reduces the workload** of healthcare personnel and the pharmacy service.
- **Ease of use** and, therefore, **time savings**, leaving behind the use of needles/syringes to perform this type of transfer.
- It allows for the **urgent and immediate** availability of eye medications, without the delays of preparation in the pharmacy service.
- The flaps on the device offer a degree of **flexibility**, making it easier to fit onto the vial. However, the needle needs to be more rigid to prevent it from bending or breaking when piercing the vial membrane.
- In addition, **specific kits with clear instructions** will be developed to ensure that the process is carried out correctly and safely at home.

INNOVATIVE ASPECTS

Both the design and manufacturing process of the device have been optimised so that it can be produced using a **3D printer** which, together with the use of three-dimensional models, has become an alternative manufacturing process to the conventional one (plastic moulding or injection). Its application within the biomedical sector opens up endless possibilities for improving the quality of life of patients and healthcare personnel.

This new form of production, already used in many sectors, is perfect for short runs as it offers great flexibility and the possibility of customisation. In addition to the low cost of materials and equipment required, it also offers rapid manufacturing.

MARKET APPLICATIONS

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It is primarily aimed at the **pharmaceutical sector or laboratory equipment manufacturers** seeking to improve the work of healthcare personnel and the treatment of patients with certain medicines.

COLLABORATION SOUGHT

We are seeking companies interested in developing a prototype, validating it and exploiting it (through licensing agreements) or in designing other new devices.