

## INP20: oral vaccine for peanuts allergy

### InnoUp Farma

Dr. Maite Agüeros

#### PROFILE



**InnoUp Farma**, with two candidates in clinical phase, is a company dedicated to nanotechnology innovation, that seeks to develop solutions for the administration of oral drugs. InnoUp has a technology platform, protected by international patents, based on the use of nanoparticles. One of our projects using this platform enables oral administration of anti-cancer drugs with low oral bioavailability. Another ongoing project based on our platform uses nanoparticles as an adjuvant in immunotherapy and vaccination.

#### SPEAKER

**Dr. Maite Agüeros**, is co-founder & CEO of InnoUp Farma. PhD in Pharmacy. Executive Master in Business Administration (E-MBA). Over 18 years of experience in nanomedicines research and 7 years of experience in the pharmaceutical industry. Co-inventor of 5 international patents.

*magueros@innoupfarma.com*



#### PRODUCT

##### INP20: oral vaccine for peanut allergy

#### MECHANISM OF ACTION

The main research on the field has focused on the use of peanut immunotherapies to prevent life-threatening reactions.

The vaccine proposed by InnoUp is based on increasing knowledge about the potential of immunological adjuvants to improve the limitations of the forms of immunotherapy being investigated. The use of this approach in INP20 allows to administrate lower doses of antigen leading to decreased side effects; the possibility of being administered every few weeks or months rather than daily exposures; and induce a long-lasting protective effect.

On the other hand, the progress in nanomedicine has allowed InnoUp to encapsulate peanut extract in protein nanoparticles acting as immunoadjuvants designed to improve mucosal allergen delivery, modify host immunity and enhance safety and efficacy of the vaccine.

#### TARGET INDICATIONS

Peanut immunotherapy.

#### CURRENT STATUS

- INP20 is manufactured by a validated and reproducible process at an industrial scale. It has already obtained the authorisation of the Spanish Agency of Medicines and Health Products to make clinical studies in patients allergic to peanuts, with a Phase I study in execution at the University of Navarra Clinic and Complejo Hospitalario de Navarra.

- INP20 is currently being tested in a double-blind phase I clinical trial to assess its safety and determine the therapeutic dose. To date, all the patients who have been administered INP20 have tolerated the treatment perfectly and have not had any adverse effects.
- On the other hand, it is very important to note that INP20 manufacturing process has been previously scaled from the laboratory to an industrial manufacturing plant with GMPs and a very reproducible process has been obtained, which results in a stable product over time.
- In addition, before starting the clinical phase, all relevant toxicity studies were carried out, obtaining very satisfactory results that indicate that INP20 is safe.

#### INNOVATIVE ASPECTS

- INP20 is a powder for extemporaneous reconstitution in water that is administered orally for the treatment of peanut allergy. It consists of protein nanoparticles that encapsulate peanut protein extract inside.
- To date, there is not long-term efficacious marketed treatment and no rigorous and adequately controlled trial has demonstrated the development of permanent tolerance to peanut.
- The solution developed by InnoUp is based on nanoparticles made from a food protein what guarantees safety, by a very simple nanoprecipitation method, that has been scaled up to a semi-industrial and continuous process.
- This innovative solution mechanism of action is to obtain tolerance based on the ability of nanoparticles to present the allergens and to obtain long term regulatory immune responses that can protect the allergic patient from dangerous allergic reactions.
- InnoUp's strategy, if the results of this study are satisfactory, would be to develop vaccines for other food allergens.

#### IPR

InnoUp has a portfolio of patents to protect its developments in the best possible way. They are already granted in many countries. The current expiration is in 2035, and an action plan has also been established to extend the protection.

The scope of protection of patents is very broad since it was not necessary to incorporate limitations in the main product claim and it was granted as it was originally drafted.

#### PARTNERING OPPORTUNITIES

Raise funds from strategic partner or venture capital to fund clinical development plan for INP20 and INP12. License-out development and commercialisation global rights.