

Next-generation allergy vaccines to be developed in Finland to create effective and safe desensitization therapies

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VTT Ventures Oy has established a spin-off which develops next-generation allergy vaccines. The spin-off is called Desentum Oy, and its operations are based on a VTT patented technology. Years of research, testing and official approval cycles are still required before the vaccines are ready for launch.

VTT holds patents on gene technology which can be applied to alter the structure of an [allergen](#), i.e. a [protein](#) causing [allergy](#), so that it will cause less [allergic symptoms](#) than the original allergen, while remaining effective in desensitisation therapy.

"The [vaccine](#) helps to improve the protection to the allergen, thus, alleviating the symptoms. That's why we prefer to use the term vaccine, instead of medication," VTT's Senior Advisor Hans Söderlund explains. The research objective is to develop an orally administered vaccine.

The foundation for this development rests on a scientific breakthrough dating back five years to a co-operation project involving VTT, the University of Eastern Finland and HUCH Skin and Allergy Hospital. Researchers were able to determine how an IgE antibody binds an allergen and were the first to present a detailed 3D structure of this complex. This proved to be different from what scientists around the world had anticipated.

Initially, Desentum Oy will develop a product line of 20 to 25 new hypoallergens which could be used as vaccines for some of the most important allergies. These include pollens (birch, hay, common wormwood, etc.), allergens from pets, and proteins associated with food allergies (fish, nuts, apple, celery). Clinical testing of the first products is anticipated to start within the next three years.

Pekka Mattila, Desentum Oy's Managing Director, knows how to run a biotechnology company and increase its business opportunities. He was one of the founding members of the Finnzymes Group and acted as its CEO until 2010, when the company was sold to the American Thermo Fisher Scientific.

What is an allergy?

Allergies are caused by the immune reaction to normally harmless proteins – allergens - present in environment, food or consumer and [medical](#) products. Due to sensitisation, the body generates Immunoglobulin E (IgE) antibodies. Next time when these antibodies recognise the same allergen, they trigger an allergic reaction and cause symptoms in the respiratory or digestive system, or the skin. An extreme allergic reaction may cause anaphylaxis or even death.

The prevalence of allergies and allergic reactions has increased in the industrialised countries, and they are now estimated to belong to the top five most costly disease groups. In Europe, the number of people suffering from allergies is estimated to exceed 80 million, while in the US the corresponding number is 65 million. According to further estimates, half of the European population will suffer from an allergy by 2015.

In the US alone, the market for antiallergic drugs is anticipated to exceed USD 15 billion by 2015. In 2010, the estimated market for new allergy

vaccines is approximately USD 700 million.

Provided by VTT Technical Research Centre of Finland

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