

Front-runner for cancer vaccines

Immune therapy is 'hot' and in the forefront is a young biotech company, DanDrit Biotech A/S, bringing cancer vaccines from the lab to patients.

By RASMUS KRAGH JAKOBSEN

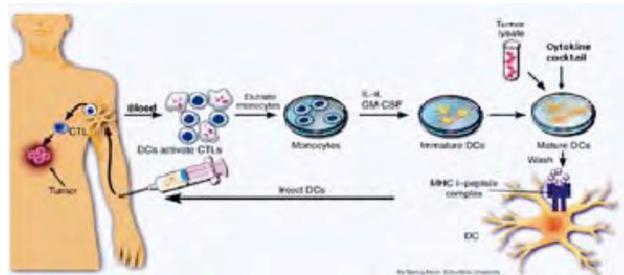
At the absolute front of current cancer research, 'cancer vaccines' are making their way to patients all over the world. One of the front-runners is a young biotech company in Medicon Valley DanDrit Biotech A/S.

"The first treatments are expected in a few years and our dendritic cancer vaccines could very well be among the first in Europe," says DanDrit CEO Dina Rosenberg Asmussen. The company is well into finishing two promising phase II clinical trials in Denmark and in Singapore.

Cancer vaccines are part of a very hot wave in modern medicine where scientists are finding new ways of getting the patient's own immune system to fight the cancer diseases and with a lot fewer side effects than traditional treatments.

Development of cancer vaccines takes two different 'routes'. The first 'route' is prophylactic cancer treatment, which rather than attacking cancer cells, is preventing development of the disease.

The second 'route' is called therapeutic cancer vaccine and take advantage of the fact that certain molecules on the surface of cancer cells are either unique or more abundant than those found on normal or non-cancerous cells. These molecules - proteins or carbohydrates can be recognised by the immune system and stimulate a specific immune response.



It has been known for about a century that vaccines against other diseases somehow could rid the patient of cancer as well, but it is only in the last two decades that scientists has identified the specific immune cell and very recently successfully found ways to guide these cells into attacking the cancer. This is the research that DanDrit Biotech is built on.

The cornerstone of all cancer treatment is to distinguish the cancerous cells from healthy cells and here DanDrit Biotech is aiming at a bundle of proteins collectively known as MAGE, that are expressed by

a broad variety of cancer types including lung, breast and colorectal cancers. Normally MAGE proteins are only found in the testis, which are immune privileged, meaning the immune system is not in contact with these cells.

Therefore MAGE can be used as a cancer marker in the rest of the body and basically all you need to do is direct the immune system at the MAGE proteins. DanDrit Biotech does this by harvesting immature immune cells called dendritic cells (hence the company name) and, using a patented technique, coaxing them to mature specifically to MAGE. The mature dendritic cells are then being re-injected in the patient where they will present the MAGE proteins to T-cells in the lymphoid tissue. The T-cells recognising the dendritic cells will then differentiate and mount an attack on tumours expressing MAGE on their surface.

"Compared to other vaccines in the field ours is broad spectrum and can be used for several different cancer types," says Head of Research Mai-Britt Zocca.

Currently labelled as an experimental treatment, the colorectal cancer trials are looking so promising that DanDrit hopes to have an approval from the European health authorities (EMA) within a few years.

But for immune therapy using dendritic cells, cancer is not the only indication in focus. Where the MAGE strategy is to boost the immune system you can take advantage of dendritic cells to do the opposite - quench the immune response. DanDrit Biotech is expanding its unique dendritic cell technology to include autoimmune diseases like type-1 diabetes, and "we are looking for a partner," says CEO Dina R. Asmussen.

