Ziccum AB submits patent application for new temperature-stable, dry-powder formulation of Adenovirus, a key global vaccine ingredient

Huddinge, 10 January 2019**. Ziccum AB (publ) has submitted a formal patent application on a new dry-powder, temperature-stable formulation of Adenovirus—a key ingredient in vaccines against Malaria, Ebola, meningitis and HIV, diseases which affect over 100 million people globally every year. The dry-powder formulation was carried out using Ziccum's technology for air-drying biologic therapies.**

Temperature demands on vaccines are getting tougher. As part of its strategic mission to vaccinate more people worldwide without having to rely on costly, complex cold-chain refrigeration systems, the WHO now requires that vaccines be stored at $+40^0$ C for at least three days in order to earn CTC (Controlled Temperature Chain) approval [(1)].

Ziccum's new, active, temperature-stable, dry-powder formulation of Adenovirus can be stored at $+40^0$ C for at least one week with no loss of active ingredient, not only meeting, but surpassing, WHO CTC requirements. The formulation is unique, according to the company, and could lead to a significant global increase in the number of people who can be vaccinated. The company has submitted a formal patent application for the new formulation.

Cracking the Cold Chain

"This solves a problem no one has been able to solve before," says CEO Göran Conradson. "We can formulate vaccines that are safe and stable to transport, without needing costly refrigeration equipment during the last, crucial step in reaching the people in most need. We do it using Ziccum's LaminarPace ™ drying technology. Adenovirus can now be dried and stored at $+40^0$ C for a week—then reconstituted back into an active, injectable vaccine by adding sterilized water. This could have a huge impact on a market worth 18 BUSD in 2017, and forecast to grow to 25 BUSD in 2021 [(2)]. Clinical trials are currently underway using Adenovirus in vaccines against Malaria, Ebola, meningitis and HIV, diseases that affect well over 100 million people a year. Ziccum's new dry formulation could put these and other vaccines within the reach of millions more people. Adenovirus is also used in gene therapy, with over 500 clinical trials ongoing[3], and other treatments including cancer treatment of solid form tumours such as breast cancer, lung cancer, pancreatic cancer and prostate cancer. All these are significant indications of the powerful commercial potential of Ziccum's unique formulation technology."

Needle-less vaccine potential

The dry formulation powder generated by Ziccum's LaminarPace ™ technology is rapidly dissolved by adding sterilized water, after which vaccination or injection can be carried out directly. However, results from the research which formed the basis of the patent application, also show that the active dry powder generated could also be used for other forms of needless vaccination, such as inhalation. This would further increase the number of people who could be vaccinated or treated—without even any need for sterilized water or syringes.

1) https://www.who.int/immunization/programmes_systems/supply_chain/ctc/en/
2) Global Data, 2018
3) The Journal of Gene Medicine Clinical Trial (http://www.abedia.com/wiley/vectors.php)

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About Ziccum
Ziccum AB (publ) develops new patented formulations of biological drugs where sensitivity to temperature differences, especially during transportation, currently limits medical and so commercial potential. The company's patented technology, LaminarPace, develops dry powder formulations of drugs and vaccines that currently only exist in liquid form. By doing so Ziccum can increase the availability of drugs and vaccines in existing markets—and open up new ones.

The information above was provided by Ziccum AB (publ) according to EU Market Abuse Regulations. The information was provided, through the above contact person, for publication on January 10, 2019.