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Subject: **Homogenization of Vaccines
Pharma application – Intravenous**

Since the late nineteenth century, public health officials have recommended and enforced vaccines for a small number of highly infectious and communicable diseases. Vaccines work with the immune system's ability to recognize and destroy foreign proteins (antigens) that it determines are "nonself." Today, however, there are more than 200 new vaccines in the research pipeline, including one for HIV.



Vaccine manufacturers, health-care providers, and public health officials are correct to point out that since the introduction of the measles vaccine, the rate of disease has declined. The major part of the vaccines are prepared for injection or intravenous administration.

Composition

Mainly of the vaccines produced are W/O vaccine with inactivated bacteria. A successful vaccine preparation is characterized by a mean particle size ranging from 250-500nm. With all particles below one micron.

The homogenisation technology is very efficient in order to obtain the micronization required by the vaccines pharmaceutical industry. The high pressure homogenizer allows to micronize the oil droplets obtaining a very small particle size distribution (0,5 µm mean size) and stabilizing the emulsion over time.

The homogenisation process

It is a wholly mechanical process, obtained by forcing a flow of product through a homogenizing valve.

Due to well-known physical laws, inside the valve they take place some contemporaneous effects of compression, acceleration, and so on, which are the cause of the homogenizing process, that acts by shattering and dispersing the solid and semisolid suspended particles.