

Lipids - The unsung vaccine component

Lipids are an unsung component in the two mRNA-based shots, the only vaccines to be approved so far in the US. Naked mRNA quickly degrades in the body and can trigger an unwanted immune reaction. To get the genetic material to its target cells, vaccine developers combine it with a mixture of several sophisticated lipids to form lipid nanoparticles, or LNPs. mRNA vaccine producers use a package of 4 lipids to formulate their LNPs:

- Ⓢ An ionizable cationic lipid that encapsulates the negatively charged mRNA
- Ⓢ PEGylated lipid that helps control particle life and size
- Ⓢ Distearoylphosphatidylcholine (DSPC), a phospholipid that helps form the structure of the LNP
- Ⓢ Cholesterol, which also contributes to structure

While the biopharmaceutical companies struggle to respond to huge demand for their messenger RNA (mRNA) COVID-19 vaccines, suppliers of the specialty lipids needed to deliver the vaccines are scrambling to keep up the demand.

Very few companies in the world supply these custom lipids in significant quantities and to the standards needed for vaccine production.

To meet the high demand for lipids, a key component of mRNA-based vaccines and therapeutics, Merck, a leading science and technology company with their decades of experience in developing and manufacturing high quality lipids, has launched their new SAFC[®] synthetic cholesterol - a high purity synthetic product to market nine months ahead of schedule.

This neutral lipid, used in commercially marketed products, is more than 99 per cent pure; offers high batch-to-batch consistency and is scalable under commercial Good Manufacturing Practice (GMP). With the introduction of new SAFC synthetic cholesterol product, Merck has increased their capacity by 50 times, thereby augmenting biomanufacturers to bring life-saving therapies to patients.

As India is witnessing a rapid rise in the cases of Mucormycosis or black fungus, the demand for Liposomal Amphotericin B (LaMB) has surged. Lipids, one of the raw materials used to manufacture the LaMB, is in shortage. The demand for lipids has increased 10 times in past couple of months. The problem is further exacerbated as there are only limited manufacturers of the lipid globally. To meet this demand, Indian manufacturer's specializing in Lecithins and Phospholipids too have now stepped up to increase its capacity for lipids by the end of 2021.

Reference:

<https://www.expresspharma.in/merck-launches-synthetic-cholesterol-product-to-meet-high-demand-for-lipids/>