



Sioux Lookout  
First Nations  
Health Authority

# CORONAVIRUS COVID-19

## INFORMATION SHEET

### Moderna COVID-19 Vaccine Ingredients

January 20, 2021

#### What is in the Moderna vaccine?

The ingredients in the Moderna vaccine are simple and amazing. The easiest way to describe them would be to say that the vaccine has **an active ingredient, salts, lipids (fats), and sugar.**

#### Active ingredient is mRNA

Basically, the Moderna vaccine is an envelope with an important message inside, blueprints that will help your body recognize and fight COVID-19.

mRNA stands for messenger RNA. mRNA is an important part of our own cells. The vaccine makers decided to use the way mRNA works in our own bodies to deliver the blueprints for making spike proteins.

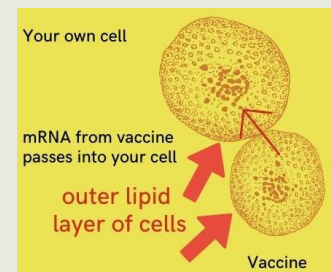
#### How does the vaccine work?

This vaccine has strands of RNA that have the recipe for the COVID-19 spike protein. The envelope for this RNA message is made of tiny lipid, or fat particles.

Lipids also make up the lining on the outer part of the vaccine's cells. They are attracted to and attach to the outer lining of your own cells, also made of a lipid layer. The envelope carrying the mRNA info can move from the vaccine's cell into your cells through this fat layer.

Your cells use the info in the recipe to make the spike proteins. Your cell will then display these proteins on the outside of its own outer layer.

Your immune system responds to these foreign proteins and begins to make antibodies to fight and destroy them. This process of making antibodies is what will give you protection against COVID-19.





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### Lipids are fats

The envelope needs to be sturdy so that the mRNA inside is protected until it arrives inside your cells where it can be used to make the spike proteins. The names are long, but they all help to give shape and strength to the mRNA envelope. The following is a list of fats in the vaccine:

**Polyethylene glycol (PEG) 2000 dimyristoyl glycerol (DMG)** helps to give structure to the mRNA envelope.

**1,2-distearoyl-sn-glycero-3-phosphocholine** strengthens the outer wall of the mRNA carrier

**Cholesterol** helps give shape and structure that stabilizes the envelope structure when there are temperature changes.

**SM-102 (Proprietary to Moderna)** makes up the envelope wall that the mRNA is packed into.

### Salts

pH is a measure of how acidic or how basic a liquid is. The normal pH of blood is between 7.35 – 7.45, slightly basic. It is important that the vaccine pH and salt matches your blood. These salts in the vaccine help with this:

**Thromethamine and thromethamine hydrochloride** help to stabilize the pH in the vaccine.

**Acetic acid and sodium Acetate** help to stabilize the mRNA envelope.

### Sugar

Sucrose is the sugar in the vaccine. It acts as a stabilizer during temperature changes of the vaccine. The vaccine is stored at a cold temperature and warms up before it is given.

### This vaccine does NOT have:

In the vaccine, there are no eggs, gluten, preservatives, blood products, human or animal cells. There is no latex in the rubber stopper of the vial of vaccine, so no risk to those with latex allergies.

### References:

To learn more about mRNA vaccines, Moderna vaccine ingredients, and how they work, visit:

<https://www.cdc.gov/vaccines/covid-19/hcp/mrna-vaccine-basics.html>

<https://coronavirus.medium.com/decoding-modernas-covid-19-vaccine-ingredients-23ea87c5f234>

<https://faqs.in.gov/hc/en-us/articles/360054156652-What-are-the-ingredients-in-the-Moderna-COVID-19-Vaccine->