



BUSINESS

# Potential COVID-19 Vaccine Powered By Agriculture



by Sonja Begemann 05:08PM Sep 24, 2020



Quillaja saponaria tree "in vitro" allows Botanical Solutions Inc. researchers to extract more valuable compounds with less environmental impact.  
( Gastón Salinas, Botanical Solutions Inc. )



A tree you've never heard of could be the key to a novel COVID-19 vaccine. Currently in development, this vaccine uses a compound called QS-21 from the Quillaja saponaria tree in Chile—one that also provides valuable agricultural compounds.



“By combining biotech with this native plant from Chile, we’ve been able to on one hand discover novel chemistry that allows us to participate in the [ag] production work today, and on the other hand have a sustainable method to produce a well-known adjuvant for modern vaccines,” says Gastón Salinas, CEO of Botanical Solutions Inc. (BSI).

The Quillaja saponaria tree is native to Chile and grows up to 60’ tall. It’s considered an evergreen and is used for more than just agricultural and pharmaceutical purposes, including for soap. The tree itself isn’t endangered, but it’s in relatively short supply for all of its different uses and there are strict laws about deforestation. Therefore, Salinas had to find a solution that left mature trees alone but still provided valuable ingredients from this evergreen.

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“We put together a novel platform to produce Quillaja saponaria using scalable tissue culture techniques—it creates ingredients at high purity and consistency, and at a low cost,” Salinas says. He started this process to create a novel biofungicide at scale—Botristop—which is used in specialty crops in South America and will soon be launched in North America.

Through a lunch conversation with a friend in the pharmaceutical industry, Salinas quickly learned that his techniques could provide value beyond the agricultural industry. At a current cost of \$400,000 to \$500,000 per gram for QS-21, his scalable technique could provide the world with a better quality and more affordable COVID-19 vaccination.

“It was something we discovered by accident and since then, the last eight months, we’ve been focusing on this new business opportunity,” he says.

## Sustainable vaccine production

The process they're using is more sustainable and reliable than simply harvesting ingredients from mature, wild trees. In just 30 days they can extract QS-21 and Botristop ingredients from *Quillaja saponaria* 'in vitro.'

Essentially, the tiny trees they're pulling extracts from are about the size of sprouts you can order for your sandwiches. Using these sprouts addresses two major issues with botanical products: reducing environmental footprint and stretching the availability of a limited supply. The plants can be produced year-round and it standardizes chemical composition so every plant is chemically identical—unlike in nature.

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*Quillaja saponaria* tree in the lab. This process uses trees that are only 30 days old to extract biofungicides and potential human health compounds. C: Gaston Salinas, BSI

For use in pharmaceuticals, identical chemical composition is critical. This makes extraction and inclusion in not only the COVID-19 vaccine, but many others, much easier. QS-21 is considered the “gold standard” in human immune system activators, so this improved process helps create more than just one vaccine.



In today's processes that exploit natural resources, companies can only extract about 20 million doses of QS-21, about one kilogram. With this technique, Salinas says BSI's current capacity creates dozens or even hundreds of kilograms. They're poised to scale up production, too, as needed.

Right now, the vaccine is still in the testing process, so it won't be available next week. However, pending FDA and other relevant approvals, this vaccine is just one way that agriculture and agricultural companies do more than just provide food—they could help save the world.