

INTERVIEW WITH DIEGO IBANEZ, CFO BOTANICAL SOLUTION INC.

Robin Blake talks to Diego Ibanez, CFO, Botanical Solution Inc. to find out more about the company's current products, pipeline and the challenges faced when bringing biological products to market



Diego Ibanez

Diego Ibáñez has business innovation and improvement expertise from both the corporate level and with start-up firms, including 15 years of experience developing and implementing innovative strategies. He also has expertise in consulting, finance, business process re-engineering, transformation and change management, with extensive experience in the forest and agriculture industry.

Please Can You Explain More About Botanical Solution Inc.?

BSI is a venture-backed corporation based in Davis, California. It was founded in Santiago, Chile in 2013 with a focus on producing botanical extracts. We have developed a proprietary R&D platform, based on plant tissue culture, for sustainable and improved production of Advanced Botanical Materials (ABM) that addresses critical and well-known issues related to current production of key traditional botanical raw materials, often obtained under exploitation of natural resources. We have a 500 m² laboratory production facility

in Chile that can produce large amounts of product without the need for field-grown natural resources – this makes our production unique, and very efficient in producing and scaling the volume of botanical extract needed. We will be setting up a new facility in California later this year to focus mainly on pharmaceuticals. As a venture-backed company we have raised approximately \$10 million so far to support our core areas. In May of 2022, BSI won the Best Startup Company of the Year Award from the World Bioprotection Forum, based on the evaluation of 20 distinguished judges.

BSI Uses a Proprietary R&D Platform Based on Plant Tissue Culture – What Are the Benefits of This Approach?

Our R&D platform relies on scalable plant tissue culture techniques that allow sustainability and scalability with great benefits in terms of quality of key botanical materials. One of the main challenges for traditionally obtained botanical raw materials is the variable chemical composition of active substances. However, our platform overcomes this as derived active ingredients have a high consistency with an almost identical chemical profile and can be manufactured on demand in a cost-effective manner. As the extracts are grown in our own labs, we are not subject to geo-political dependence, and have a reduced environmental footprint.

The development of our R&D platform has been a long journey. We have had to research about how to grow *in vitro* plants, and how to work with them to produce high quality extracts that perform consistently in the field. We have been testing our first biofungicide for over ten years in different geographies and multiple crops against a number of fungal pathogens with great results. We have a mixed IP strategy; the production platform itself is protected by trade secrets, and the extracts and formulated products are patented.

Please Can You Tell Me More About ABM-01?

ABM-01 is based on a plant which is native to Chile, named *Quillaja saponaria* Molina. This product is the active ingredient used in the production of our biopesticide Quillibrium®, a broad spectrum biofungicide with a superior performance to prevent and control *Botrytis cinerea*, one of the most harmful fungal diseases in high value crops worldwide, responsible for hundreds of millions of dollars in losses every year. The unique modes of action of Quillibrium® allows worldwide exports of top quality fresh produce, while meeting the world's strictest MRL guidelines.

One of the compounds that we found in ABM-01 is used as a vaccine adjuvant in the pharmaceutical industry. QS-21



Quillaja saponaria



BSI lab growing *Quillaja saponaria* trees and extracting from plants *in vitro*.

is a highly effective active immune modulator and currently used in several COVID-19, Shingles and Malaria vaccines. QS-21 has traditionally been obtained from wild raw material sources, with high manufacturing costs averaging around \$400,000 per gram. However, there are currently restrictions in supply of this compound. Our R&D platform provides us with an opportunity to offer a scalable supply of pharmaceutical grade QS-21 and become a reliable, cost effective supplier to this key market.

Please Can You Explain the Benefits of Your Partnership with Syngenta for Quillibrium®?

For agriculture, our business model is based on strong partnerships with top tier agrochemical companies with the best market access for biopesticides. We successfully launched Quillibrium® with Syngenta in Chile in 2019 (Quillibrium® is sold under the trademark Botristop® in Chile). Since 2021,

this partnership has been expanded to Peru, and soon will reach Mexico. Our partnership with Syngenta allows us to be part of their portfolio of solutions where our product, due its great compatibility with conventional chemistry, plays a key role in delivering best in class Integrated Pest Management (IPM) strategies for growers.

Are You Exploring Other Regions of the World?

Quillibrium® is a highly efficacious broad spectrum fungicide that has been tested against a number of diseases affecting high value crops. We are currently exploring opportunities in other regions such as Brazil and Asia-Pacific and are working on registration for the US.

Do You Have Other Products About to be Launched or in the Registration Pipeline?

Our vision is to become a portfolio company rather than being a single product company – currently we have one product – based on ABM-01. But now using the same platform, and same methods of production, we are looking at novel plant extracts from other plant species that will fuel new bionematicides, biobactericides and bioherbicides in the future. As part of our business plan, we expect to launch four new biopesticides between 2023 and 2026. We are actively looking for collaborations with R&D organizations, universities, startups and big companies to boost our R&D platform with novel plant materials.

So You Do Have Plans to Develop Bioherbicides?

Yes, of course, we are actively screening for plant materials biologically active as herbicides. Bioherbicides represent a massive opportunity, especially for plant extracts. Our active ingredients need to be accompanied by efficient delivery methods to ensure a longer residual effect in the field.

What Challenges Do You See for Bringing Products Onto the Market in UK and/or Europe?

Two years ago we started with a data gap analysis on EU registrability for Quillibrium®. We understand that the EU has a complex regulatory path, especially for natural substances. However, we are confident that our product will be successfully registered for this market in the future.