

BioBetter pioneers cultivated meat future with molecular farming

13 September 2023 | News

Media growth start-up targets annual commercial production of 5 tonnes by 2025



Media growth start-up targets annual commercial production of 5 tonnes by 2025

FoodTech start-up BioBetter, Ltd., opens its first food-grade pilot facility to accelerate the production of key growth factors for the cultivated meat industry. The company has pioneered a unique protein manufacturing platform for producing growth factors (GFs) using tobacco plants as self-sustained, animal-free bioreactors.

Helping cultivated meat companies offer affordable and accessible products to consumers, BioBetter is revolutionising the future of cellular agriculture with its innovative molecular farming-based production platform. Currently, cultivated meat production processes are relatively expensive, making it a challenge to scale up and reach price parity with animal-based counterparts.

“Cultivated meat is still very expensive in comparison to conventional meat and the key is to reduce the growth medium costs to a minimum,” explains Amit Yaari, Ph.D., CEO of BioBetter. “Our target is to reduce the production cost of growth factors, including insulin, a key part of the growth medium, to \$1 per gram which is 100-fold less than the going rate today.”

The start-up already has achieved five impressive milestones in just the past year:

Production scale-up/building pilot plan

Commercial-scale cultivation of insulin- and FGF-expressing tobacco plants

Reaching GF expression levels that enable a significant reduction in production costs

Significant regulatory progress and advances with the Israel Ministry of Health

Collaboration with leading cultivated meat companies

BioBetter discovered a new purpose for the traditionally shunned tobacco plants, transforming them into bioreactors for the production of GFs. These GFs play a key role in the proliferation and differentiation of cultured meat cells, allowing for the formation of authentic and well-structured muscle tissue.

Designed for both environmental safety and efficiency, these bioreactors will be grown in a large-scale, net-house cultivation system. The plants are carefully engineered to prevent the escape of any transgenic material. They are induced to express growth factors only when chemically triggered, and the company exclusively uses non-food, non-feed tobacco plants to eliminate any risk of inadvertent consumption or cross-contamination of food crops.

“Our holistic approach not only underscores our commitment to safety and environmental responsibility but also streamlines regulatory processes,” reveals Dana Yarden, M.D., co-founder of BioBetter. “Our commitment to sustainability shines through in every facet of our operations. We plan to use recycled and low-quality water for irrigation, minimise nitrogen fertiliser use, and reduce emissions and environmental impact.

The newly established pilot plant can process 100kg of tobacco plant-derived GFs daily. Constructed in adherence to the highest quality standards, the facility meets all regulatory requirements for the production of food-grade growth factors, including FGF2 and insulin. It currently is progressing through the essential stages of securing approval from the Ministry of Health for food manufacturing licensing. The company is committed to scalability, adhering to ISO2200 and HACCP standards.

“We more than doubled our workforce from 23 to 50 workers to advance all aspects of production, cultivation, and R&D,” reports Yaari. “We stimulate the commercial aspirations of cultivated meat start-ups and the pilot plant signifies a substantial step toward the company’s next growth stage in 2025: the capacity for processing 25 tonnes of leaves daily, reaching commercial production of five tonnes annually by the end of 2025.”