

## PRODUCING CANNABINOIDS WITH YEAST

**Gainesville, FL** – Through the use of its proprietary technology, [BioTork LLC, a Florida-based biotechnological company](#), doubles the rate and the production of a cannabinoid precursor in a strain of yeast engineered to do so. This opens the door to the production of safe, pure, and reasonably priced cannabinoids anywhere in the world. The therapeutic benefits of marijuana have been making headlines, but the psychoactive nature of the drug remains controversial. BIOTORK's breakthrough technology makes a crucial step towards a solution.

### What are Cannabinoids?

Most of us have heard of the multitude of cannabinoids produced by marijuana plants. The most famous of these is Tetrahydrocannabinol (THC), which has psychoactive effects. However, marijuana plants also produce many other cannabinoids, some of which have solely therapeutic effects, such as Cannabidiol (CBD).

### Their Importance

CBD has been shown to have anti-convulsive effects and may be effective in the treatment of intractable forms of epilepsy. In states that have legalized marijuana, it is sold in nutritional supplements including the well-known preparation "Charlotte's Web." The global epilepsy drugs market has been forecasted to reach over \$5.4 billion by 2024, and CBD's have a market value between \$40,000-\$100,000 per kg.

### Using Yeast to Make Them

Multiple companies have begun genetically engineering yeast that can produce cannabinoids. They have been taking the genes responsible for the cannabinoid-making pathways in the marijuana plant and inserting them into yeast strains.

### The Roadblock

The reality is, these GMO strains of yeast cannot make enough cannabinoids. The companies working on developing the cannabinoid pathways in yeast are faced with this major challenge: the yeast cannot compete with plants in terms of CBD yield and productivity; their yeast grow slowly and produce little. This makes it currently too expensive and time consuming to use yeast to produce cannabinoids, as using plants remains the more viable alternative.

### The Advantage

The advantage of using yeast to produce cannabinoids is that the yeast can be engineered to produce only cannabinoids that are solely therapeutic, like CBD, and not those that are psychedelic or psychotropic, like THC. In other words, yeast could be used to make pure products used for nutraceutical or pharmaceutical purposes. This is not the case with plants. Not only is growing Cannabis illegal in most states, but the plant makes over 100 different types of cannabinoids. Currently, the marketing of CBD as a supplement is not allowed by the FDA partially because the CBD made by plants always contains at least some traces of THC. Even if the cultivation of Cannabis for cannabinoid production were to be legalized in more areas, producing CBD would involve the extra cost of purification and chemical separation.

### **The BioTork Solution**

BioTork has a solution that would retain the advantages of using yeast for cannabinoid production while overcoming the challenge of poor yield. The company uses natural evolution to improve the product yield and growth rate of organisms used in the making of biological products. With its technology, BioTork has proven the ability to improve cannabinoid-producing yeast. The improved strain can grow faster and produce more of the desired product, a cannabinoid precursor. By pairing the genetically engineered yeast with the increased productivity acquired through use of BioTork's technology, the production of cannabinoids in yeast becomes more economically viable, giving the market hope for the low-cost production of pure, non-psychoactive, therapeutic cannabinoids. BioTork's breakthrough could make engineered "designer" yeast the new-and-improved marijuana plant.

### **ABOUT BIOTORK**

[BioTork](#) is a biotechnology company whose focus is the optimization of industrial fermentation processes. The company develops robust microorganisms and their related industrial processing conditions capable of converting low-value carbon sources, such as agro-industrial by-products, into high-value chemical commodities (e.g.; biofuel and feed). Using a state-of-the-art patented proprietary technology, BioTork has mastered an industrial methodology based on evolutionary optimization.

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