



# Bioactive composition from *Arthrospira (Spirulina) platensis* and its use as inducer of plant defense reactions

## ■ KEYWORDS

Spirulina  
Induced plant defenses  
Fertilizers  
Pesticides

## ■ PATENT

**Title:** activators of plant metabolic changes

**Priority date:** 2017-01-03

**Status:** PCT application filed in January 3rd 2018. **Entry into national phase in US and EP**

## ■ LICENSING

Research collaborations  
License agreements

## ■ INVENTORS

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## ■ PROBLEM

Use of chemical fertilizers and pesticides and its associated natural habitat destruction has caused a "major extinction event" and experts predict the trend to continue, thus lowering the world's biodiversity and changing its ecology. In this dramatic way, attention to environmental impact of known or new chemical compounds in agriculture should be drawn, especially because world population is expected to double by the year 2050 and the conversion of large natural ecosystems, will require farmers to double food production.

One of the most imperative hitches concerning the production of food crops is the **difficulty of controlling plant diseases to maintain the high quality and yield**, which the producer and consumer expect. In addition, numerous plant pathogens have developed resistance to the active ingredients of a wide range of agrochemicals causing systematic loss of broadly used pesticides from the market.

## ■ SOLUTION

The present invention is related to a composition comprising a polysaccharide fraction extracted from **the biomass of *Arthrospira (Spirulina) platensis*** or an alcohol-soluble extract of the same.

By measuring the PAL (Phenylalanine Ammonia-Lyase) activity, it was shown that such composition **induces plant defense reaction in *Arabidopsis thaliana* cells suspension but also in wheat and tomato plants after seedlings coating or soil amendment or foliar spraying or roots dipping**. A **Synergistic effect** was also observed by adding an other natural derived bioactive molecules such as chitosan or chitooligosaccharides to the polysaccharide fraction. Advantageously, these bioactive molecules from *Arthrospira* are natural products (different from the biomass of this microalgae) which means that they can be obtained from natural renewable sources with little or no modification. In particular, this composition is an elicitor composition that could be used to protect plants (increase natural plant defense against pathogens).

## ■ INNOVATION

- Inducing plant defense from natural products
- Produced from natural renewable sources

## ■ TECHNOLOGY STATUS

TRL 3 : validation at lab scale

## ■ MARKETS

- **Agriculture**

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