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University of Copenhagen awarded €1.8m grant to establish glucoraphanin fermentation technology

The University of Copenhagen has announced that it had been successful in securing a grant for **€1.8m** from the **Danish Strategic Research Council** in order to develop a novel manufacturing platform that is intended to yield a rich source of pure glucoraphanin. The programme will also complete safety studies and culminate in a human trial on the product.

Glucoraphanin is an important phytochemical found in cruciferous vegetables, such as broccoli. Its health benefits have been linked to cancer prevention, heart health and a number of other significant diseases.

Despite the strong body of scientific evidence behind the molecule's health benefits¹, glucoraphanin has not yet been successfully commercialised as a food ingredient or dietary supplement; primarily because it is extremely difficult to manufacture by chemical synthesis and too costly to purify from plant material. To get around these barriers, a research team from the University of Copenhagen is aiming to use its patented state-of-the-art gene technology to recreate the entire biosynthetic pathway in a strain of yeast, using the 14 essential genes naturally used by broccoli plants. When the work is completed, it will be possible to manufacture glucoraphanin by simple fermentation at a cost that will enable its widespread use in foods and dietary supplements.

The grant will fund the development programme, called NAT4LIFE, led by Professor Barbara Halkier in collaboration with the human nutritionist Professor Richard Mithen, Institute of Food Research (Norwich, UK), the yeast expert Dr. Uffe Mortensen, Denmark's Technical University, and the health coach and communicator, Chris McDonald. Barbara Halkier is an expert in glucosinolate biosynthesis and was the first to successfully move this biosynthetic pathway to a plant that would not normally produce these molecules.

Evgen, based in the United Kingdom, holds exclusive rights to the technology and is leading the commercialisation of the product in the food and dietary supplement industries.

Commenting on the news of the grant success, Professor Barbara Halkier said: "We are delighted that we have received this grant. It will allow us to establish a glucoraphanin production platform in yeast and to make a significant step towards providing evidence-based documentation for the health-promoting benefits of glucoraphanin, the major glucosinolate in broccoli".

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¹Glucosinolates, isothiocyanates and human health. Traka M. and Mithen R. F. (2009) *Phytochem Rev* 8 (1); 269-282