



# TEWICOS - PROCESS DEVELOPMENT FOR THE PRODUCTION OF LIPOPHILIC AND HYDROPHILIC EXTRACTS FROM THE MICROALGAE *TETRADESMUS WISCONSINENSIS* AS RAW MATERIALS

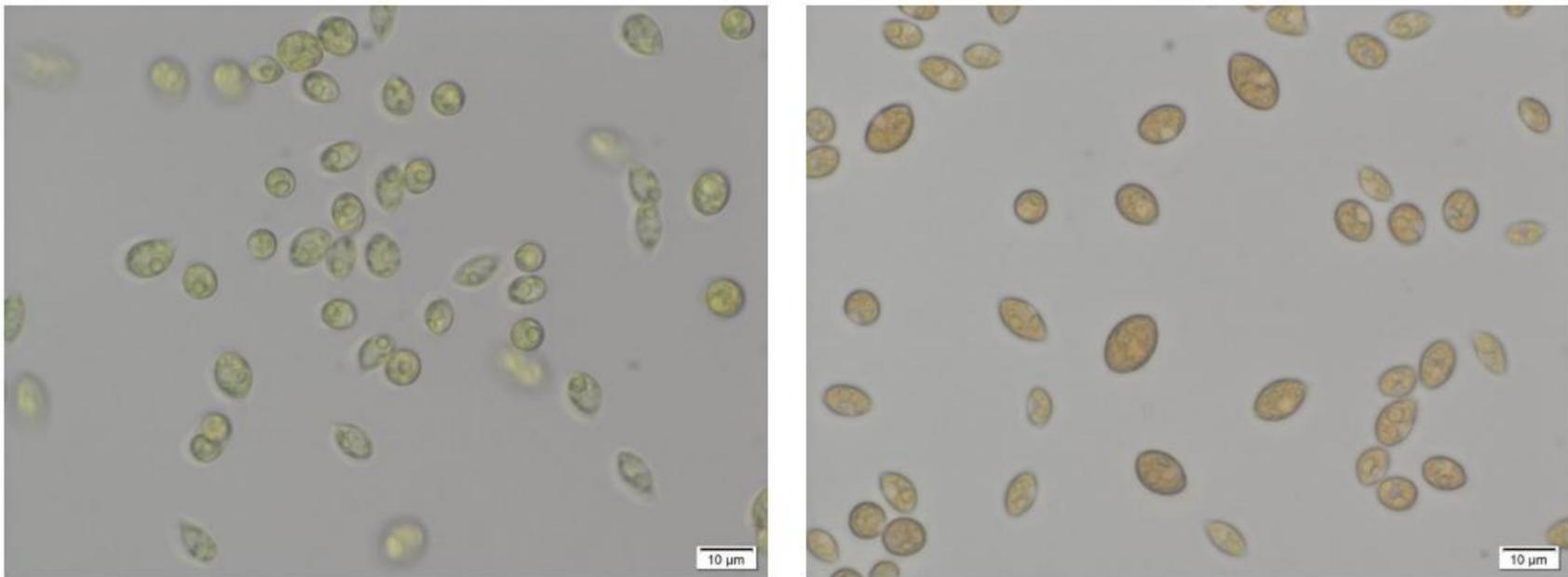


Figure 2: Microscopic image of *Tetrademus wisconsinensis* (left: after cultivation start, right: after accumulation of canthaxanthin in the algae cells).

## Background

Microalgae contain a large number of valuable ingredients such as vitamins, unsaturated fatty acids, carotenoids and proteins that show a high added-value potential for various areas of application. In the form of biomass, they are mainly marketed in the food and feed sectors and as fertilizers. In the last years, microalgae were increasingly established as a raw material source for fine chemicals as well as for cosmetics and pharmaceutical active ingredients. The most important commercial products are carotenoids, phycobilins,  $\omega$ -3 fatty acids, and in form of extracts added to cosmetic products for skin and hair care. The algae-enriched cosmetics slow down light- and environment-driven skin aging by moisturizing and protect the skin so from UV radiation (anti-aging effects). Contained carotenoids increase the absorption of photons and bind free radicals as a protection against oxidative cell damage as an efficient antioxidant and minimize so UV-related serious harm.

Cosmeceuticals (composed of "cosmetics" and "pharmaceuticals") are high-quality cosmetic products, whose efficacy has been proven in scientific studies. The capability of these substances lies in between classic cosmetic and medicine products. The demand is enormous, US\$ 42 billion were turned with cosmeceuticals, where antioxidant ingredients had the largest market share. Although, there had been a regular boom in cosmetic raw materials from natural sources, which are usually obtained by extraction from plants or macroalgae (phytochemicals or phytoextracts). However, the use of biotechnological produced microalgae in the high-value cosmetics sector had been limited to niches despite the diversity of functional ingredients.

## Project Partners



## Funding



Federal Ministry  
of Education  
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