



Natural vegan cholesterol

Did you know that cholesterol is absolutely vital for our cells and a very popular ingredient in a wide range of cosmetics? Did you also know that cholesterol is animal derived, and naturally produced vegan cholesterol is painfully missing on the market? Let's change that with acib's cholesterol-producing yeast!

BACKGROUND

Cholesterol has a somewhat bad image since high blood levels can lead to fatty deposits aka 'plaques' in arteries, leading to atherosclerosis and a subsequently higher risk for cardiovascular diseases. However, it is a vital compound of our cells and an important skincare ingredient since it is a moisturizer and enables the protective function of our skin. Cholesterol makes our skin smooth, reduces wrinkles and fine lines and all of that without the greasy feeling left by many other oily substances. It is non-irritating and also protects our skin, as well as other cosmetic ingredients from UV-damage. It is used for many applications, from lipsticks and after sun care over muscle creams and skin-healing formulations to foundations and wrinkle sera. Additionally, it can be used as an emollient in case of eczema and psoriasis. Despite cholesterol's ubiquitous use, it has recently gained negative traction since it is animal derived, e.g., from cow brains and spinal cords. There is not only concern about possible transmission of bovine spongiform encephalopathy (BSE), but about the animal origin itself (as in the campaign 'Are cow brains lurking in your lipstick?'). Regrettably, cholesterol is absent in bacteria and the amount in plants is so incredibly low, that it has long been assumed that plants contain no cholesterol at all. Currently, there are plant-based extracts with similar sterols and there is chemically synthesized cholesterol available, but there has been no technology for real, naturally produced vegan cholesterol.

TECHNOLOGY

acib has an industrial yeast strain (*Komagataella phaffii* aka *Pichia pastoris*), which has been modified to produce cholesterol instead of ergosterol. This yeast is not only a potent tool for research (the functional expression of mammalian (cholesterol-dependent) membrane proteins, for drug screening and for the natural production of cholesterol-based compounds), but it is also a unique source of fully natural, vegan cholesterol for cosmetics. Since *K. phaffii* is able to grow rapidly (doubling times of ~2 hours), also in inexpensive media, to a very high cell density (> 100 g/L of dry cell weight) it represents the ideal host for industrial large-scale production of vegan, natural cholesterol.

OFFER

acib offers our cholesterol-producing yeast strain, including further optimization and upscaling for you. IP developed in such projects can be fully transferred to you as our investor/industrial partner.

acib-EXPERTS:

Prof. Dr. Harald Pichler
Dr. Tamara Wriessnegger

DEVELOPMENT STATUS:

TRL 4 (Technology validated in lab)

IPR:

Cholesterol-producing yeast already developed – further IP can be generated and transferred to YOU as our project partner

KEYWORDS:

Vegan, Natural, Cholesterol, Cosmetics, Skincare

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