

**Bioferments from natural products
in technology of cosmetics**

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The cosmetics industry is constantly transforming, seeking innovative and alternative sources of bioactive compounds, especially in the area of natural cosmetics technology. Complementing this need is the global push to implement the principles of a closed-loop economy, in order to seek innovative solutions through upcycling of agri-food waste.

This dissertation undertakes an interdisciplinary study of the use of Kamchatka berry pulp and brewer's thresh - waste products with high biotechnological potential - to produce bioferments.

Strains of lactic bacteria and yeasts were isolated from the environment of the analyzed raw materials for use in fermentation processes. The result of the activities was to obtain bioferments characterized by a diverse matrix of bioactive compounds. Comprehensive analyses were carried out to characterize the matrix profiles of bioferments, assess their cytotoxicity and microbiological purity, confirming their safety for further applications in cosmetic technology.

Cosmetic masses with bioferments were developed and tested for physicochemical stability and microbiological purity. The creams were tested on probands in a dermatological and application test, which made it possible to evaluate their effectiveness and safety of use.

In parallel, freeze-dried products were produced from the solid fraction of bioferments and analyzed, confirming their potential as a functional food ingredient.

The research indicates the desirability of innovative biotechnological solutions for raw material waste management. The developed cosmetic and food products are in line with the principles of sustainable development, contributing to minimizing the negative impact of waste on the environment and increasing the added value of waste raw materials.