Universitatea Tehnică a Moldovei

TECHNICAL UNIVERSITY OF MOLDOVA,
STATE UNIVERSITY OF MOLDOVA

1. QUEEN BEE BREEDING PROCESS

AUTORS: EREMIA, N., MACAEV, F., PETCU, I., ZAGAREANU, A. CATARAGA, I., JEREGHI, V., COȘELEVA, O., VUTCAREV, A.

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Patent application MD no.2684 of 05.09.2025

DESCRIPTION: The queen rearing process includes forming the nurse bee colony by removing the queen comb from the nest and 2-3 combs with uncapped brood, introducing the frame with transferred larvae into the nest between the frames with capped brood and feeding the nurse bees with a mixture of 50% sugar syrup and 0.75-2.5 mL/L of 3% Choline Chloride aqueous solution, in an amount of 0.5 L of the mixture per bee colony, daily for 5 days, from the introduction of the frame with transferred larvae until the brood is capped.

The result of the invention consists in increasing the number of larvae accepted for growth by 19.4-30.4%, the diameter of the bolls - by 5.9-12.3%, the length - by 2.5-8.4% and the mass of unmated queens - by 0.05-3.98% and fertilized ones - by 12.4-22.5%.

APPLICATION: Can be used in beekeeping for raising queen bees.



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2. QUEEN BEE BREEDING PROCESS

AUTORS: EREMIA, N., MACAEV, F., PETCU, I., ZAGAREANU, A., JEREGHI, V., COȘELEVA, O., SUCMAN, N., CATARAGA, I.

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Patent application MD no. 2680 of 21.08.2025

DESCRIPTION: The process of raising queens includes forming the nurse bee family by removing the queen and the combs with uncapped brood, introducing the frame with the transferred larvae into the nest and feeding the nurse bees with a mixture of 50% sugar syrup and 1.2-3.6 ml/L of an equimolar 3% aqueous solution of the mixture of glucuronic acid with choline chloride, in an amount of 0.5 L of the mixture per bee family, daily for 5 days, from the introduction of the frame with the transferred larvae until the hives are hatched.

The result of the invention is to increase the number of larvae accepted for growth by 22.3-36.2%, the diameter of the combs - by 1.8-12.7%, the length - by 1.2-5.0% and the mass of unmated queens - by 0.2-5.5% and fertilized ones - by 0.3-9.1%.

APPLICATION: Can be used in beekeeping for raising queen bees.




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PRO INVENT
Salonul Cercetării Științifice, Inovării și Inventicii
Ediția a XXII-a

STATE PROJECT FOR YOUNG RESEARCHERS 25.80012.5107.10TC
"STABILIZATION OF PLANT-DERIVED BIOACTIVE COMPOUNDS BY LIPOSOMAL ENCAPSULATION (BioPLIP)"

Popovici Violina, Covaliov Eugenia, Capcanari Tatiana, Cojocari Alexandrina, Radu Oxana

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Aim of the Project:

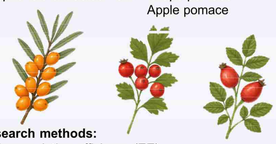
The **BioPLIP project** aims to develop advanced technology for the stabilization and enhancement of bioaccessibility of bioactive compounds extracted from local horticultural sources and agro-industrial waste. Sustainable valorization of horticultural sources will contribute to creating innovative functional food products and nutritional supplements that meet consumers' emerging needs for healthy and sustainable food options.

Materials and Methods

Research materials:

Carotenoids extracted from: Sea buckthorn powder
Hawthorn powder
Rosehip powder

Polyphenols extracted from: Grape pomace
Apple pomace



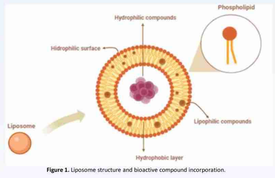


Figure 1. Liposome structure and bioactive compound incorporation.

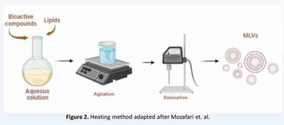


Figure 2. Heating method adapted after Mozafari et. al.

Research methods:

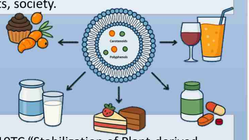
- Encapsulation efficiency (EE)
- Retention rate (RR)
- Amount of encapsulated bioactive compounds (EBA)
- Analytical methods (UV-Vis; HPLC)
- Characterization of liposomes (DLS; FTIR; TEM)

Novelty and Originality

- ✓ Integrated multifunctional approach to liposomal encapsulation.
- ✓ Improves solubility, stability, and controlled release of bioactive compounds.
- ✓ Valorization of local horticultural resources and agro-industrial by-products.
- ✓ Alignment with circular bioeconomy and sustainability principles.
- ✓ Comparative evaluation: encapsulated vs. free compounds.
- ✓ Direct applications in functional foods and nutritional supplements.

Expected Results & Impact

- ✓ Advanced liposomal encapsulation method for bioactive compounds.
- ✓ Improved stability, bioaccessibility, and release efficiency.
- ✓ Applications in functional foods, beverages, dairy, and supplements.
- ✓ Agro-industrial waste valorization (grape & apple pomace).
- ✓ Beneficiaries: food industry, pharma, agriculture, researchers, students, society.



ACKNOWLEDGEMENTS

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