Implementation of the project “Intramammary propolis formulation for prevention and treatment of mastitis in dairy ruminants”

Lada Radin1, Goran Bačić1, Krešimir Matanović1, Nino Mačešić1, Tomislav Mašek1, Diana Brozić1, Miroslav Benić2, Božo Radić3, Jelena Šuran1

1Faculty of Veterinary Medicine Zagreb, Heinzelova 55, 10000 Zagreb, [lada\_radin@vef.hr](mailto:lada_radin@vef.hr)

2 Croatian Veterinary Institute, Savskacesta 143, 10000 Zagreb

3Hedera d.o.o., 4. gardijske brigade 35, Kamen, 21000 Split

The project “Intramammary propolis formulation for prevention and treatment of mastitis in dairy ruminants” is a part of a collaboration between Faculty of Veterinary Medicine Zagreb and a small enterprise Hedera d.o.o. from Split. It is financed by European Regional Development Fund and EU StructuralFunds. Its implementation started in October 2014 and will last until February 2016.

The main goal of the project is the research and development of the innovative concept of intramammary formulation of propolis as an alternative to existing prevention and treatment of mastitis (with antibiotics). The development of such original product is aimed at strengthening of milk farmers through the reduction of their therapy and prevention costs. It also represents a shift in meeting the standards of ecological animal husbandry. The formulation development is conducted parallel with the research in dairy cows and goats together with veterinarians and livestock owners.

Main activities of the project are: analysis of theformulation composition, *in vitro* study of its efficacy against common mastitis pathogens, as well as clinical trials on Holstein cows and Saanen goats during dry period and lactation. Health and productivity of animals, the incidence of subclinical and clinical mastitisas well as milk quality will be monitored through clinical observation and sampling of blood, milk and saliva. Samples obtained in a non-invasive way (milk and saliva) will be validated for measuring oxidative stress and metabolic biomarkers in comparison to blood.

During preliminary screening of total 4 dairy herds, 800 milk samples per farm were analyzed microbiologically, for somatic cell count and chemical composition. Clinical safety trials revealed different tolerability of cow vs. goat udder towards propolis formulation. This finding lead to the modifications in the composition of the initial formulation. *In vitro* analysis has shown high efficacy of propolis formulation in preventing the growth of more than 20 strains of common mastitis pathogens.

The opinion of veterinarians and breeders of the practicality and usefulness of this propolis formulation will be of great importance for the development of the product. The project will seek to directly respond to the needs of its end-users.