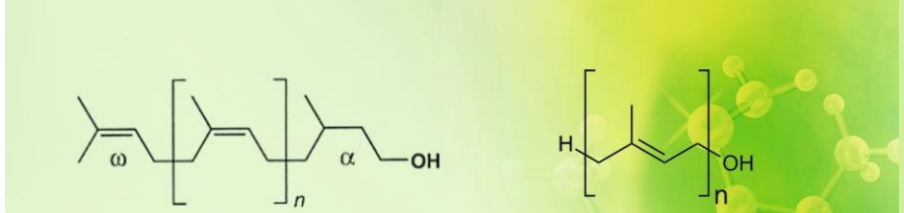
DEVELOPMENT OF **BIO-EFFICIENT ANIMAL FOOD** FOR ORGANIC FARMS

PROJECT NO. 18-00-A01620-000042

- **The aim of the project "DEVELOPMENT OF BIO-EFFICIENT ANIMAL FOOD FOR ORGANIC FARMS"** was to develop compositions of liquids containing coniferous thick extract and bio-supplementary mixtures with coniferous thick extract to specify their preparation technology and to analyze the carotene isomer and chlorophyll content in the extract mixtures after preparation and storage for 3 months.

- Due to the water-insoluble and poorly soluble substances in the thick extract of needles, it is not possible to prepare aqueous solutions or liquids. Turbid liquids, sediment liquids are not suitable as an additive to drinking water for birds or animals.

- Developed formulations and prepared mixtures of coniferous thick extract and supplementary feed using 8 different products produced by JSC "Dobeles dzirnavnieks" in accordance with Council Regulation (EC) No. 834/2007 and Commission Regulation (EC) No. 889/2008 organic complementary feed. The technology of preparation of mixtures has been clarified.



PROJECT RESULTS AND THEIR USE

- **The content of chlorophyll and carotene isomers** in liquids containing coniferous thick extract and in mixtures of supplementary feed and coniferous thick extract was determined by the developed methods after preparation and storage for 3 months. Intestinal morphometry measurements of chickens that received 4 weeks of supplementary feed with coniferous thick extract and DNA extraction and rRNA gene sequencing procedure were performed on cecal samples.

- 2 options have been tested for the preparation of thick needle extract and supplementary feed mass – **the wet granulation method and the method of mixing the ingredients.**

- Pellets from the mixture of thick needle extract and supplementary feed are difficult to form and there was a large weight loss during granulation. Therefore, the samples were prepared by the mixing method.

- The amount of chlorophyll and carotene isomers decreased (due to oxidation) in the prepared samples after 3 months of storage. This means that mixtures of complementary feed and coniferous thick extract must be prepared for a specific, short shelf life, e.g., weekly use.

Supplementary feeding stuffs containing thick needle extract may be recommended for use:

- for organic farms **of young poultry (chickens) breeders,** using as a supplementary feed the complete feed produced by JSC "Dobeles dzirnavnieks" for 0-8 weeks old chickens for organic farms 02-77.

- for organic farms **in lambs,** using oats or a mixture of oats and barley as complementary feed grains.

Mixtures of complementary feed and needle extract for feeding to chickens / lambs contain different amount of needle extract. The amount of coniferous thick extract in the mixtures is affected by the weight of the chicken / lamb. The amount of complementary feed also increases with the growth of the chicken / lamb. The amount of complementary feed to be fed and the amount of thick needle extract to be fed should be increased weekly as the weight of the chicken / lamb increases.

The following formula shall be used to calculate the amount of thick needle extract in weekly feed for lambs / chickens:

$E = [(D \times M) :1000] \times 7 \times n$

where:

E - amount of thick needle extract in g to be used with the complementary feed in 7 days

D - 30 mg / kg (dose of thick needle extract)

M - weight in kg (lamb / chicken)

7 - number of days

n - number of chickens/lambs to be fed

The mixture of complementary feeding stuffs and thick needles extract is prepared for a week by mixing the calculated amount of thick needles extract E with the amount of complementary feeding stuffs obtained by subtracting the amount of extract E from the amount of supplementary feeding stuffs fed for 7 days.

To prepare the mixture, mix about one-third of the calculated complementary feed with the calculated mass of thick needle extract to a homogeneous mixture, then add the remaining quantity of the complementary feed in portions and mix the mass until homogeneous.