**SPECIFICATION**

- **Product**: Larch arabinogalactan - Lavitol-arabinogalactan
- **Source**: Deharian Larch - *Larix Gmelini* (Rupr) Rupr.
- **Part used**: Stumps
- **Source of Origin**: Russian Federation
- **Chemical family**: Polysaccharide
- **Composition**: Larch arabinogalactan - min. 90% by weight
- **CAS Number**: 9036-66-2
- **EINECS**: 232-90-0
- **Identification**: HPLC method
- **Physical state**: Solid powder
- **Colour**: From off-white to pale cream or light grey
- **Solubility**: Soluble in ethanol, water-ethanol solutions, ethyl acetate: water, almost insoluble in oils: in pure ethyl alcohol
- **Extraction solvent**: Aqueous-alcohol solution
- **Stability**: Stable at normal conditions of at least 2 years
- **Shelf life**: 2 years from the date of production

**DOSAGE OF INTRODUCTION**

<table>
<thead>
<tr>
<th>Product</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugary cookies</td>
<td>The substitution of 4% flour to equal quantity of arabinogalactan</td>
</tr>
<tr>
<td>Products made of biscuit dough</td>
<td>The substitution of 4% flour to equal quantity of arabinogalactan</td>
</tr>
<tr>
<td>Bread and bakery products</td>
<td>1-3% to mass of flour</td>
</tr>
<tr>
<td>Protracted cookies</td>
<td>4% to mass of flour, preliminary dissolved in estimated value of water</td>
</tr>
<tr>
<td>Dairy products</td>
<td>1-3% to mass of product</td>
</tr>
<tr>
<td>Butter, margarine, spreads</td>
<td>1-3% to mass of product</td>
</tr>
<tr>
<td>Beverages</td>
<td>3.4g/l liter</td>
</tr>
</tbody>
</table>

Physico-chemical and biological properties of arabinogalactan determine the spheres of application in food industry. Thus, arabinogalactan is used in food industry in following directions:

1) **As thickener, stabilizer and emulsifier**:
Larch arabinogalactan is highly water soluble compound. (larch arabinogalactan readily disperses in cold or hot beverage, remains clear in solution and does not precipitate out of solution) larch arabinogalactan produces low-viscosity solutions that have minimal impact on mouthfeel and viscosity; arabinogalactan binds fat and holds water as well as has a positive impact on gluten quality.

2) **As the source of soluble dietary fiber**:
Arabinogalactan is the source of dietary fiber and soluble cellulose. Due to its hygroscopicity (the ability to absorb water) arabinogalactan has a beneficial influence on digestible food that could avoid number of large intestine diseases. Prebiotic fibers, such as larch arabinogalactan, provide the benefits of traditional fibers, with the ability to increase beneficial microflora, thus improving gastrointestinal health. The dietary fibers create the favorable conditions for the growth of probiotic bacteria such as Lactobacillus and Bifidobacteria in the intestines, which are important for GI Tract health.

3) **As food dietary additive for production of food product with pharmaceutical properties**
Larch arabinogalactan has many beneficial properties with high impact on human health. Arabinogalactan possesses a highly biological activity, such as enhancing the immunity, protecting liver, digestive support, prebiotic, hypolipidemic, and gastroprotective. These properties may allow larch arabinogalactan to be used in a variety of food, beverage, nutraceutical, functional applications.

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LARCH ARABINOGALACTAN in Food Industry

Raw Material for production of dietary supplements, functional and food products, sport nutrition

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Properties of Larch Arabinogalactan

- High solubility in water
  Larch arabinogalactan is well soluble in both hot and cold water. 14 - 50 grams of arabinogalactan could be dissolved in 100 mL of water at temperature 0 – 90°C, without having an influence on color and turbidity of the solution. Arabinogalactan is also soluble in aqueous-alcohol solutions, insoluble in oils and weakly soluble in pure ethanol.

- Moisture-retaining power
  This property of arabinogalactan is especially important in production of farinaceous confectioneries.

- Fat-binding properties
  Larch arabinogalactan has the ability to bind fats. The fat-binding ability of larch arabinogalactan is on average 85%.

- Bactericidal properties
  Larch arabinogalactan stimulates antiinfectious resistance of organism at the expense of increasing function activity of cells of cytophagous system in the case of infecting by Yersinia pseudotuberculosis L-716. It activates all cytophagous processes including chemotaxis, adhesion, absorption bactericide ability of peritoneal macrophages. Arabinogalactan also inhibits the reproduction of pseudotuberculous microbes inside macrophages. Arabinogalactan increases the activity of NADPH - oxidase and superoxide scavenger, activates oxidative metabolism of cells and, thus, activates bactericide effect as respect to absorbed microorganisms.

- Acting as prebiotic
  Arabinogalactan is an all natural soluble prebiotic dietary fiber that has a beneficial impact on the gastrointestinal system. Arabinogalactan promotes better disintegration, nutritive absorption and digestion in the gastrointestinal tract and could be recommended as a functional dietary supplement in the daily diet. Arabinogalactan promotes to increase the production of short-chain fatty acids, which are extremely important for normal functioning of the organism.

Key Benefits of Larch Arabinogalactan in Food Industry

1. Biscuit dough products
   - Increases the density of products;
   - Keeps the freshness of products;
   - Improves the organoleptic characteristics;
   - Stabilizes egg mass;
   - Improves the formation process of egg-sugar mass;
   - Increases the swelling capacity;
   - Inhibits the process of moisture evaporation;
   - Enriches the product with dietary fibers.

2. Bakery products
   - Improves the qualitative parameters of bread;
   - Improves organoleptic characteristics and dough plasticity;
   - Improves homogenous porosity and loaf volume;
   - Enriches bread with dietary fibers;
   - Retains moisture level.

3. Sugar cookies
   - Extends the freshness of cookies;
   - Binds fat and hold moist;
   - Improves the organoleptic characteristics and dough plasticity;
   - Increases the absorbency;
   - Enriches the product with dietary fibers.

4. Spreads, butter, margarine
   - Improves the organoleptic indices;
   - Improves the texture of products;
   - Stabilizes the consistence and;
   - Prevents the butter crumb formation;
   - Increases the density of a product;
   - Promotes the stabilization of fat-water emulsions, improving the plasticity of products.

5. Dairy products and yogurt
   - Stimulates the growth of friendly bifidobacterium and lactobacillus;
   - Enriches the product with dietary fibers;
   - Reduces ripening time in yoghurts;
   - Increases acid forming ability.

6. Beverages
   - Increases the solubility of fat-soluble vitamins;
   - Delivers the benefits of fiber;
   - Promotes intestinal and immune health;
   - Decreases the bitter or chemical aftertaste of the beverage, improves the organoleptic characteristics.

7. Functional food and dietary supplements
   - Arabinogalactan is an all natural soluble prebiotic dietary fiber that has a beneficial impact on the gastrointestinal system.
   - Arabinogalactan promotes better disintegration, nutritive absorption and digestion in the gastrointestinal tract, prevents intestinal diseases and the negative impact of carcinogens and could be recommended as a functional dietary supplement in the daily diet.
   - Arabinogalactan promotes to increase the production of short-chain fatty acids, which are extremely important for normal functioning of the organism, assists in growth of “friendly” bacteria;
   - Stimulates the growth and activity of normal microflora in intestines;
   - Promotes a healthy immune system.