



“L.E.V.”/Ekstraktu rupnica/ Ltd.

Organic Baltic Birch sap conc.



Introduction

Baltic Organic Birch Sap conc. is a clear natural ingredient, harvested in Baltic area and manufactured with concentration in 5-6 times. It has a long tradition in application for food and cosmetic purposes in our country. It may be collected in short spring period for 2-3 weeks. One tree gives about 50 L of natural sap. The collection is carried out with a very mild damage of the trunk, which heals quickly and without negative consequences for alive tree.

History a Little.

Birch water was widely used both by the peasantry and the nobility. The tonic, revitalizing and nutrient properties of birch have been mostly appreciated after winter, when human body was weakened by the long period of winter and deficiency of fresh produce. Most of the sap produced has been used as a fresh drink, but in some areas they added yeast, and in more recent times also sugar or other aromatic plants to produce a variety of refreshing drinks or a kind of wine.

Records of traditional medicine indicate that birch water helps to treat or prevent several diseases, like stomach diseases, kidney stones, colds, deficient liver function, scurvy, headaches, skin diseases.

Swedish cartographer Olaus Magnus made a brief note in 1555 that Scandinavians were tapping birch for sap and using it as a fresh drink. Ethnographical records from various provinces give detailed information on the gathering and manufacturing of the sap into drinks or its use as an ingredient in various food stuffs.

In Finland and Carelia birch sap was tapped off in the spring and used as a refreshing drink. The Saami in Finland also made a refreshing beverage of birch sap

In the Norwegian medieval “Fletey book” (“Fleteyjarbók”), completed in 1394, there is a description of how King Sverre and his men “spent two nights in the wilderness and had no food but sap they could suck from the trees”

Danish botanist Simon Paulli describes birch water in 1648. Birch sap has also been used for medicinal purposes and was included in the “Danish pharmacopeia” in 1772.

Chemical composition

Active ingredients are fructose, sucrose, organic acids as malic, succinic, citric and phosphorous, magnesium, manganese, zinc and so on.

The chemical composition of birch sap is relatively varied because it is a natural product that depends on season, collecting time, collecting location, etc.

Table 1. Chemical composition of different samples from birch sap concentration process.

Parameter	Initial birch sap	Concentrated birch sap	Permeate
Brix	0.9	5.0	0.0
Sugars, %	0.89	5.01	0.00
Acids, %	0.08	0.41	0.00
pH	5.54	5.60	6.97
Amino acids, mM	0.12	0.59	0.00

The Brix value of birch sap is usually in the range 0.5-1.5. University of Turku has measured the seasonal variation of the sugars in birch sap in Finland (Reference 1). The highest content of dry matter mentioned in the article is 2.0%. The average sugar content of Finnish birch sap (Nord source) is approx. 1%. Similar values have also reported for other Scandinavian countries, Baltic countries, Russia and China (Reference 2). Thus, uncondensed birch sap has about 0.5 to 2% of sugar content, averaging around 1%. The sugar content depends on collecting time, birch variety, location, and weather. Even though this may seem like a low concentration, it is higher than in many other tree species.

The main organic acid in fresh birch sap is **malic acid**. The concentration range for malic acid in Organic Baltic Birch sap is 0.02%-0.1%.

Fifty-five biologically active compounds were separated from birch sap. Most dominant peak with retention time at 1.49 min contained a very polar fraction of birch sap, including three organic acids, **succinic acid**, **malic acid** and **citruline** (represented about 6.7% of the total amount),

There are **five amino acids**, and **phenolic compound** metabolite tyrosol 4-sulphate (represented about 32.6 % of the total amount). Overall, nine amino acids were separated from birch sap and represented about 16.8 % of the total amount, including **leucine** (2), **isoleucine** (3), **glutamine**, and **phenylalanine**. It should be noted that organic acids and amino acids separated from the Baltic birch sap sample are widely distributed and described in the birch sap products. It was found that birch sap was not very rich with **phenolic compounds**, but it had **homovanillic acid** (4), **(+)-catechin 3-O-glucose** (6), and **resveratrol 3-O-glucoside** (8). Birch sap contains **betulin** (7) which represented about 2.4% of the total amount and some unidentified **tannins**.

The sap is rich in mineral **micro-** and **macroelements**. Calcium (**Ca**), sodium (**Na**), magnesium (**Mg**), potassium (**K**) and iron (**Fe**) are prevailing elements followed by small amounts of **Mn**, **Zn**, **Cu**, **Al** and **Ni** (Zyryanova et al. 2010; Jeong et al. 2013). It is proved that Latvian birch sap contains up to 20% more **glucose** and **fructose** than birch sap produced in Finland (Kūka et al. 2013).

Application

Nowdays birch sap may be so-called superfood, or “**superdrink**” – birch water. It is a source for juice, soft and functional drinks, fermented beverages, syrups and food supplements manufacturing.

Swedish ethnologist Gösta Berg even suggested that tree sap was also probably the most used and one of the most effective medicines against scurvy in earlier times. Research on birch sap indicates that it can be used against anaemia, tuber culosis, kidney and liver stones, gout, arthritis, rheumatism, cold and skin diseases. It also has diuretic properties, can be used as worm powder and prevents tooth troubles.

In veterinary medicine birch sap cures some cattle diseases and increases milk production, while in bee farming it is used as extra feed for the bees.

Most of the sap produced has been used as a fresh drink, but in some areas they added yeast, and in more recent times also sugar, in order to produce a kind of wine. The sap was also used when making coffee. For children it was a kind of sweet.

Additives for the fermentation of tree saps:

Anethum graveolens
Avena sativa (sprouting grain)
Berberis vulgaris (fruit juice)
Carum carvi (dried fruits)
Citrus lemon (juice)
Citrus lemon (peels)
Fabaceae (beans)
Hordeum vulgare (roasted grains)
Juniperus communis
Malus sp. (dried fruits)
Prunus sp. (cherry fruits)
Pyrus sp. (dried fruits)
Quercus robur (bark)
Ribes nigrum (twigs)
Ribes uva-crispa (wine)
Syzygium aromaticum
Perry (flower buds/clove)
Vaccinium myrtillus (juice)
Vaccinium oxycoccus (fruit juice)
Vitis sp. (rasins)
Rye bred
Grains (barley, oats), flour (barley, oats, rye)
Maltose
Sugar
Yeast



We invite you to enjoy the use of the ingredient in your formulations.



For more information

sales@lev-extracts.com
marketing@lev-extracts.com

Manufacturer

L.E.V./Ekstraktu rupnica/ Ltd.
Gludas pagasts, Jelgavas novads, Latvia

Organic Baltic Birch sap conc. is suited for Kosher, Vegan, Halal, Organic defined products.

References

1. Kallio H., Ahtonen S., Seasonal variations of the sugars in birch sap, Food Chem., 1987, 25(4), 293–304.
2. Helfferich D., Birch: white gold in the boreal forest, Agroborealis, 2003, 35(2), 4–12.
3. Łuczaj Ł., Bilek M., Stawarczyk K., Sugar content in the sap of birches, hornbeams and maples in southeastern Poland, Cent. Eur. J. Biol., 2014, 9(4), 410-416.
4. Svanberg I., Sõukand R., Łuczaj Ł., Kalle R., Zyryanova O., Dénes A., et al., Uses of tree saps in northern and eastern parts of Europe, Acta Soc. Bot. Pol., 2012, 81(4), 343–357
5. Kallio H., Ahtonen S., Seasonal variations of the acid in birch sap, Food Chem., 1987, 25(4), 285–292.

