



THE ARCTIC

# BILBERRY

— The Real Superberry

---

北极欧洲越橘——真正的超级浆果



## ARCTIC BILBERRIES GROW IN THE WILD

The Arctic bilberry, *Vaccinium myrtillus L.*, grows in the wild in Finland. Depending on the growing conditions, its annual crop is 100–300 million kg (the average crop is 184 million kg), of which about 10% is harvested. Picking Arctic bilberries in Finland is covered by the right of public access, Everyman's Right, which means that you're free to pick them in the wild without getting permission from the landowner.



### DOWNLOAD THE FREE ARILYN APP!

Arilyn is compatible with Android and iOS smartphones and tablets with a camera and an internet connection.

1. Open Arilyn and point the camera at the image with the Arilyn icon on it.
2. As if by magic, the image comes to life on your screen!

### 免费下载艾利林 (Arilyn) 应用程序!

艾利林应用程序适用于载有安卓或iOS系统的手机及平板电脑，这些设备需带摄像头，可上网。

1. 打开艾利林，摄像头对准带有艾利林图标的图像。
2. 像变魔术一样，图像在屏幕上活动起来!

## 北极欧洲越橘生长在野外

北极欧洲越橘，拉丁学名 *Vaccinium myrtillus L.*，生长于芬兰的野外。视乎生长环境，这种越橘的年产量可达1亿到3亿公斤（平均产量为1.84亿公斤），其中约10%被收割。在芬兰采摘北极欧洲越橘受公众使用权的保护，即“公众权利”，这意味着，你可以自行采摘野外的越橘，无需取得土地所有人的许可。





Arctic bilberries have been gathered and used in Finland for centuries. In households, the berries are used in soups, puddings, pastries, porridge and so on. Freshly baked bilberry pie is one of the best-loved Finnish delicacies. Bilberry and lingonberry juices are often served with meals in Finland.

The most common Arctic bilberry products made by Finnish companies are dried berries, powdered berries, cold-pressed juices, soups, snacks, smoothies, sweets and liqueurs. Some ingredients can be extracted from the berries and used to make cosmetics and dietary supplements.

Arctic bilberries can fit into the daily diet of people of all ages. The berries have been used in Finland since ancient times in folk medicine. This is mentioned in the poems of the Finnish national epic *Kanteletar* and in *Flora Fennica*, the first catalogue of Finnish plants, compiled by Elias Lönnrot. In recent years several studies on the functional, health-promoting properties of the berries have been published, e.g. on reducing risk factors relating to diabetes, intestinal cancer, cardiovascular diseases, aging and eyesight. Research results concerning the health aspects of Arctic bilberries have increased the commercial interest in the berries both in Finland and internationally.

数百年来，芬兰人一直在采摘和使用北极欧洲越橘。芬兰家庭把越橘用于制作汤、布丁、糕点和粥等。新鲜烘焙的欧洲越橘馅饼是芬兰人最爱的美食之一。芬兰人经常用欧洲越橘汁和越桔汁佐餐。

芬兰企业通常把北极欧洲越橘制成越橘干、越橘粉、冷压果汁、汤、零食、果昔、糖果和甜酒。越橘中的某些成分可被提取，用于制作化妆品和营养补充品。

所有年龄阶段的人都可以在日常饮食中加入北极欧洲越橘。自古以来，这种越橘就用于芬兰的民间医药。这一点在芬兰国家史诗集《康特勒琴之神》（*Kanteletar*）中有所提及，由伊莱尔斯·兰恩洛特（Elias Lönnrot）编制的芬兰第一本植物目录《芬兰植物》（*Flora Fennica*）中也有相关记载。最近几年，数项研究显示，这种越橘具有一定功能特性，能促进身体健康，比如，减少糖尿病、肠癌、心血管疾病、衰老和眼疾的风险因素。关于北极欧洲越橘的研究结果刺激了市场对这种越橘的兴趣，无论在芬兰还是其他国家。

## ARCTIC BILBERRIES ARE DARK BLUE INSIDE

Unlike cultivated blueberries (*Vaccinium angustifolium*, *V. corymbosum*), Arctic bilberries are dark blue on the outside and in. Because of the high anthocyanin content, their flesh is fruity and violet. Bilberries are a superior source of polyphenols and antioxidants. They contain several times more flavonoids and four times as much anthocyanin than cultivated blueberries. The importance of the bilberry in the human diet and for health is supported by scientific reports demonstrating its effectiveness against several chronic diseases, such as cancer, diabetes and cardiovascular disease.

Compared with the cultivated highbush blueberry, the Arctic bilberries are smaller: they are 6–8 millimetres in size. Bilberries grow individually on the branches of a ramified shrub that reaches 10–40 cm in height. The skin of the Arctic bilberry is dark blue, waxy and soft, and it breaks fairly easily.

## 北极欧洲越橘内部呈深蓝色

与人工培植的蓝莓（矮丛越橘，高丛越橘）不一样，北极欧洲越橘内外均呈现深蓝色。由于花青素含量丰富，这种越橘的果肉果味浓厚，而且呈蓝紫色。欧洲越橘是多酚和抗氧化物的优秀来源。这种越橘的类黄酮含量比人工培植的蓝莓高出几倍，花青素含量是后者的四倍。欧洲越橘对人类饮食和健康的重要性已得到科学报告的支持，显示这种越橘能有效对抗几种慢性疾病，比如，癌病、糖尿病和心血管疾病。

与人工培植的高丛蓝莓比较，北极欧洲越橘较小：只有6–8毫米。欧洲越橘植株为10–40厘米高的灌木，越橘各自长在植株分出来的枝丫上。北极欧洲越橘有深蓝色、柔软的蜡质果皮，很容易裂开。



Cross-section of an Arctic bilberry

北极欧洲越橘的横截面



Cross-section of a cultivated blueberry

人工培植蓝莓的横截面





### ARCTIC BILBERRIES ARE HANDPICKED

The name 'Arctic bilberry' is needed to help companies and consumers avoid mistakes in the market. It is good to know that the Arctic bilberry is very different from the cultivated blueberry. The Arctic bilberry grows in wild forests, while the blueberry is cultivated. The Arctic bilberry is handpicked and grows ecologically, with no carbon or water footprint. It is also available with organic certification, because Finland has the world's largest organic-certified forest berry areas.

### 北极欧洲越橘由人工采摘

“北极欧洲越橘”这一名称能帮助企业 and 消费者避免在市场上犯错误。我们需要知道，北极欧洲越橘与人工培植蓝莓有天壤之别。北极欧洲越橘生长于野外丛林，而人工培植蓝莓由人工种植。北极欧洲越橘由人工采摘，生长符合生态原则，没留下碳足迹或水足迹，可进行有机认证，因为芬兰有全球最大的有机认证丛林浆果区。



## ARCTIC BILBERRIES CONTAIN HIGH AMOUNTS OF ANTHOCYANINS

The anthocyanin levels of Arctic bilberries are high when compared with other berries. It contains anthocyanins at a level that is 3–5 times higher than that of the highbush blueberry. Anthocyanins are bioactive compounds, which give the Arctic bilberry its characteristic dark blue or purple colour inside and out. The difference in flesh colour between the bilberry and blueberry is visible, since the flesh of the highbush blueberry is white.

Natural anthocyanins have many biomedical functions. Many scientific studies link anthocyanins to the inhibition of cardiovascular disorders, age-induced oxidative stress, inflammatory responses, and diverse degenerative diseases. There are also studies where berry anthocyanins improve neuronal and cognitive brain functions and ocular health.

Finland's climate is colder than those of its neighbouring countries, Sweden and Estonia. In mid-summer, there are 19 hours of daylight in southern Finland, and in the northern Arctic Circle region the sun does not set at all. According to the studies, this abundance of light stimulates the creation of anthocyanin compounds; therefore, Arctic bilberries contain anthocyanins at higher levels all over Finland.

### 北极欧洲越橘含有丰富的花青素

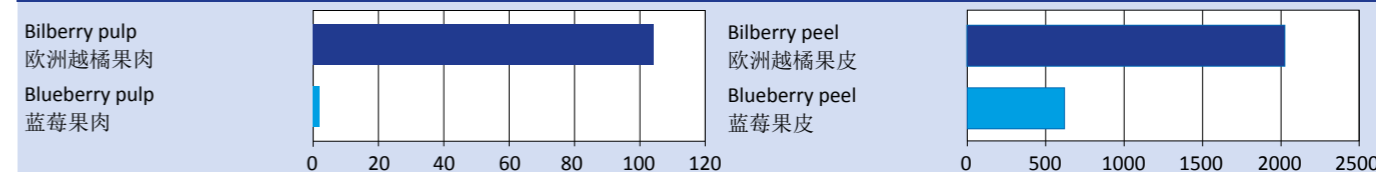
与其他浆果比较，北极欧洲越橘的花青素含量水平相当高。它的花青素含量比高丛蓝莓高出3–5倍。花青素是生物活性化合物，令北极欧洲越橘内外均拥有标志性的深蓝色或紫色。欧洲越橘和高丛蓝莓的果肉颜色存在明显差异，高丛蓝莓的果肉呈白色。

天然花青素有许多生物医药功能。很多科学研究认为，花青素能抑制心血管疾病、年龄引起的氧化应激、炎症反应及多种变性病。还有研究显示，浆果的花青素可改善神经功能、脑部认知功能和眼健康。

与瑞典和爱沙尼亚这些邻近国家比较，芬兰的气候更冷。仲夏时节，芬兰南部的日照时间长达19小时，在芬兰北部的北极圈地区，太阳从不落下。研究显示，充沛的日照刺激花青素化合物的形成；因此，芬兰各地的北极欧洲越橘的花青素含量较高。

## Anthocyanin content of the Finnish forest bilberry (*Vaccinium myrtillus*) and blueberry (*Vaccinium corymbosum*, *V. angustifolium*) pulp and peel (mg/100 g fresh weight)

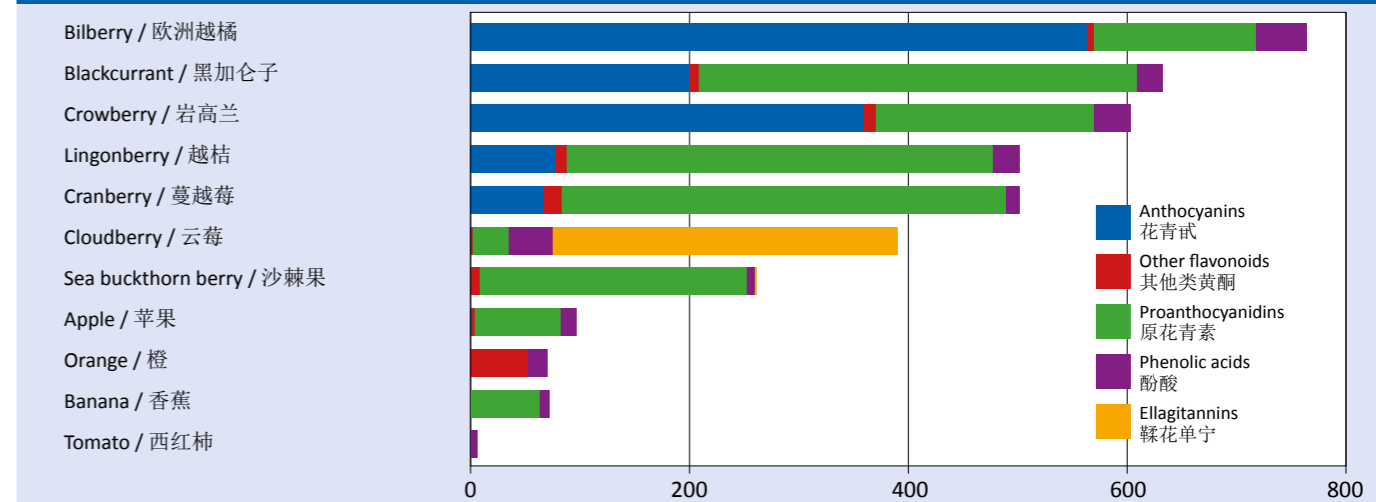
花青素含量比较，芬兰从林欧洲越橘 (*Vaccinium myrtillus*) 对比蓝莓 (高丛越橘, 矮丛越橘), 果肉与果皮 (毫克/100克鲜重)



Anthocyanin content of the Arctic bilberry and cultivated blueberry. Source: Riihinen et al. 2008. 北极欧洲越橘和人工培植蓝莓的花青素含量。来源: Riihinen 及其他, 2008年。

## Polyphenol content of berries, vegetables and fruits (mg/100 g fresh weight)

多酚含量比较, 浆果、蔬菜和水果对比 (毫克/100克鲜重)



Source: Koponen et al. 2007. Hellström et al. 2009. 来源: 科普勒恩 (Koponen) 及其他, 2007年。海斯特莱姆 (Hellström) 及其他, 2009年。

## References / 参考资料:

- Hellström JK, Törrönen RA, Mattila PH. Proanthocyanidins in common food products of plant origin. *J Agric Food Chem* 2009;57:7899-7906
- Lätti A, Riihinen K, Kainulainen P. 2008. Analysis of anthocyanin variation in wild populations of bilberry (*Vaccinium myrtillus* L.) in Finland. *J. Agric. Food Chem.* 56, 190–196. 11
- Koponen JM, Happonen AM, Mattila PH, Törrönen RA. Contents of anthocyanins and ellagitannins in selected foods consumed in Finland. *J Agric Food Chem* 2007;55:1612-1619
- Misikangas M, Pajari AM, Päiväranta E, Oikarinen SI, Rajakangas J, Marttinen M, Tanayama H, Törrönen R, Mutanen M. 2007. Three Nordic berries inhibit intestinal tumorigenesis in multiple intestinal neoplasia/+ mice by modulating beta-catenin signaling in the tumor and transcription in the mucosa. *J Nutr.* 137(10):2285-90
- Määttä-Riihinen KR, Kamal-Eldin A, Mattila PH, González-Paramás AM, Törrönen AR. Distribution and contents of phenolic compounds in eighteen Scandinavian berry species. *J Agric Food Chem.* 2004;52(14):4477-86. (s. 4481)
- National Institute for Health and Welfare, Nutrition Unit. Finnish food composition database. 2016. Bilberry: <https://fineli.fi/fineli/en/elintarvikkeet/442?>
- Riihinen K, Jaakola L, Kärenlampi S, Hohtola A. Organ-specific distribution of phenolic compounds in bilberry (*Vaccinium myrtillus*) and "northblue" blueberry (*Vaccinium corymbosum* x *V. angustifolium*). *Food Chemistry* 2008;110:156-160
- USDA 2014. Agricultural Research Service United States Department of Agriculture. National Nutrient Database for Standard Reference Release 26, Blueberries, raw: <https://ndb.nal.usda.gov/ndb/foods/show/2166?fgcd=&manu=&lfacet=&format=&count=&max=35&offset=&sort=&qlookup=blueberry>
- Åkerström Andreas (2010) Factors affecting the anthocyanidin concentration in fruits of *Vaccinium myrtillus* L. Faculty of Natural Resources and Agricultural Sciences, Department of Agricultural Research for Northern Sweden, SLU, Umeå. Acta Universitatis agriculturae Sueciae 2010:52 Thesis. [http://pub.epsilon.slu.se/2342/1/akerstrom\\_a\\_100908.pdf](http://pub.epsilon.slu.se/2342/1/akerstrom_a_100908.pdf)



Arctic Flavours Association Kauppakatu 20 ● 89600 FI-Suomussalmi, Finland  
Tel. +358-8-6155 5590 ● E-mail: [info@arctic-flavours.fi](mailto:info@arctic-flavours.fi) ● [www.arctic-flavours.fi](http://www.arctic-flavours.fi) ● [www.arcticbilberry.fi](http://www.arcticbilberry.fi)  
This brochure has been printed with financial support from the Ministry of Agriculture and Forestry.