Technical Description

Refined and standardized dry extract produced from Bilberry Fruit Fresh
Appearance: Dark reddish-violet, amorphous hygroscopic powder
Storage: Preserve in tight container, protected from light, heat and humidity

### Bilberry Fruit Dry Extract (EP, USP)

<table>
<thead>
<tr>
<th>Component</th>
<th>EP</th>
<th>USP</th>
</tr>
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<tbody>
<tr>
<td>TLC Identification</td>
<td>Complex</td>
<td>Complex</td>
</tr>
<tr>
<td>ASSAY (HPLC)</td>
<td>NMT 3.0% (Nadirine)</td>
<td>NMT 3.0% (Nadirine)</td>
</tr>
<tr>
<td></td>
<td>UV 25%</td>
<td>UV 25%</td>
</tr>
<tr>
<td>Total anthocyanins (HPLC)</td>
<td>NMT 1.0%</td>
<td>NMT 1.0%</td>
</tr>
<tr>
<td>Water content</td>
<td>NMT 2.5% (Nadirine)</td>
<td>NMT 4.5% (Nadirine)</td>
</tr>
<tr>
<td>Heavy metals</td>
<td>NMT 0.5%</td>
<td>NMT 5.0%</td>
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<tr>
<td>Microbiology</td>
<td>Complex with Harmonized Pharmaceutical Method</td>
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</tr>
<tr>
<td>Residual solvents</td>
<td>NMT 0.5%</td>
<td>NMT 1.0%</td>
</tr>
<tr>
<td>Contaminants</td>
<td>According to current legislations</td>
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### Bilberry Ethanol Extract (36% HPLC, 25% UV)

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Bibliographic References

6. Bilberry Ethanol Extract (36% HPLC, 25% UV) Bilberry Fruit Dry Extract (EP, USP) Bilberry Ethanol Extract (36% HPLC, 25% UV)
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Name of the plant: Vaccinium myrtillus  
Part of the plant used: Berries

Vaccinium myrtillus is a small deciduous shrub belonging to the Ericaceae family. The genus Vaccinium comprises almost 200 species which are most commonly found in Europe, Asia and Northern America. European Bilberry grows wild to a height of six to twenty-four inches and often forms large, dominant colonies.

Fruits are widely harvested and checked carefully prior to shipment. Bilberries fruits are soft and juicy and thus highly susceptible to damage. Linnea staff is present on site to monitor all procedures involved in harvesting, cleaning, refrigerating, storing and transporting the fruits and to guarantee raw material quality from harvest to delivery.

Bilberry extract contains anthocyanosides, tannins and flavonoids that have been largely studied for their antioxidant effects protecting against the radical damage.  

Anthocyanosides and other phenols from bilberry up-regulate defences against oxidative stress, influencing genes controlled by the antioxidant response element, inhibiting the enzymes that cause the degradation of collagen fibres and providing biosynthesis. The resulting effect is the decrease in capillary permeability and fragility and the inhibition of platelet aggregation. Bilberry constituents prevent the release and synthesis of pro-inflammatory compounds.  

The documented effect on night vision is mainly related to the recovery of rhodopsin, which improves ocular blood flow and lowers intraocular pressure, favourably modifying several enzymatic parameters involved in retina damage.  

Vasoprotective activity  
Epidemiological investigations have indicated that anthocyanin consumption through the intake of products such as bilberry juice, red wine or Bilberry extract reduces the risk of cardiovascular diseases.  

Bilberry preparations are used in the prevention and as adjuvants in the treatment of vascular and blood disorders such as varicose veins, thrombosis and angina.  

Antiulcer and astringent activity  
For its content in Tannins, bilberry extract is used as astringent and to treat diarrhoea. In animal models of gastric ulcers, cyanidin chloride contained in Bilberry extract showed antiulcer activity.  

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Free radical scavenging, antioxidant and chemoprotective activity  
Antioxidant have demonstrated an inhibitory effect on the growth of some cancer cells and, due to their global chemopreventive effect, they are recommended in the prevention of a range of diseases (atherosclerosis, cardiovascular disease and chronic inflammation).  

Bilberry extract plays an important role in protecting against handset stress-induced liver damage by both scavenging free radicals and inhibiting lipid peroxidation.  

Free radical scavenging activity has been determined by the DPPH test measuring the antioxidant capacity. Bilberry exhibited the most potent antioxidant activity (IC50 = 2.5 mg/L) among different berries species.  

Common Applications and Evidence

Eye health and vision improvement  
Taken orally, Bilberry extract improves visual acuity in healthy individuals and it is a solid support in the treatment of eye diseases such as cataracts, macular degeneration, retinitis pigmentosa, glaucoma and myopia.  

Intravenous eye diseases intrapapillary, glaucoma and diabetes, anticytostatic mitotically blood vessel abnormalities and help to prevent visual field disorders. They are effective in preventing and inhibiting the development of the early stages of diabetic retinopathy. Significant improvements have been observed in ophthalmoscopic and angiographic parameters of patients receiving Bilberry for one month (3, 5).

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