# METABOLITE PROFILING OF BILBERRIES (*VACCINIUM MYRTILLUS* L.)

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The effects of climate on production and the quality of bilberries have been studied in a controlled phytotrone experiment using clonal material originating from Northern and Southern parts of Finland. In the experiment individual plants from two Northern clones and two Southern clones have been grown at 12° and 18 °C. At each temperature 3 different light treatments have been tested; 1) 24 h natural light (long day), 2) 12 h natural light (short day) and 3) 24 h natural light with an addition of extra red light. All berries produced by each plant have been harvested at maturity and have been analyzed for several important quality parameters. The metabolic profiling results show that levels of flavonols (epicatechin and catechin), hydroxyl acids (chlorogenic acid, hydroxyl cinnamic acid), quinic acid and all analyzed carbohydrates (myo-inositol, fructose, glucose and sucrose) are highest at 12 °C. On the contrary, total anthocyanins levels were highest at 18 °C and this was also reflected in the results on analysis of several anthocyanins derivates with the exception of Del 3-Ara that was significantly higher at 12 °C than 18 °C. Northern clones had significantly higher levels of total anthocyanins, all measured anthocyanin derivates, total phenols, malic acid and sucrose than Southern clones.

# ANTIOXIDANT AND ANTIRADICAL CAPACITY OF PLANT EXTRACTS FROM ANGOLA

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Plant extracts have great potential as a source of new medicines to many diseases such as Alzheimer disease or cancer (1). Oxidative stress takes part in the pathogenesis of these and other diseases. Phenolic compounds derived from secondary metabolism of plants, showed to provide a defence against free radicals. The antioxidant and anti-radical capacity from extracts (aqueous, methanol, chloroform, ethyl acetate and n-hexane) of *Phragmanthera glaucocarpa* (Peyr.) Balle (Fam. Loranthaceae) an *Piliostigma thonningii* (Shum.) Milne-Redh. (Fam. Fabaceae) were evaluated by DPPH and ABTS methods. DPPH inhibition (%) by the ethyl acetate *P. glaucocarpa* extract was 18.9%±0.5% whereas with a Trolox solution with the same concentration (0.05 mg/mL) 65.5%±0.5% was obtained. Identical result was obtained for ABTS radical scavenging when ABTS radical was inhibited by Trolox (10.2±0.1%) and by *P. glaucocarpa* ethyl acetate extract (2.8%±0.1%). Total phenolics were evaluated by the Folin-Ciocalteau method with the highest concentration obtained in the *P. glaucocarpa* ethyl acetate extract (174.0±0.1 mg of gallic acid equivalent (GAE)/g of extract) followed by *P. thonningii* ethyl acetate extract (107.6±0.1 mg of gallic acid equivalent (GAE)/g of extract). *P. glaucocarpa* can be a source of phenolics and other promising natural coumpouds.

**Reference:** (1) Kumaran, A.; Karunakaran, R. J. Food Chemistry, 97 (2006): 109–114.