

Scandinavian Berries as a Nutritionally Relevant Source of Antioxidants

D. Stewart¹, N. Deighton¹, S. Kärenlampi², H Kokko² and HV Davies¹

¹Unit Of Plant Biochemistry, Scottish Crop Research Institute, Dundee DD2 5DA, Scotland.

²University of Kuopio, Savilahdentie 9F, Kuopio, Finland.

d.stewart@scri.sari.ac.uk

Introduction

The evidence for the links between many degenerative diseases, such as coronary heart disease etc., and free radicals is becoming overwhelming^(1, and references therein). Prevention of these conditions via increased antioxidant intake may be achieved by eating soft fruit. They generally contain vitamin C and phenolic compounds such as anthocyanins and flavonoids, all of which are antioxidants. As part of a project to look at the cultivation of wild berry species in Scandinavia we determined the antioxidant capacity, and its derivation, in arctic bramble, rowan, sea buckthorn, blueberry and cloudberry. Juices were prepared and the total phenols, anthocyanins and vitamin C contents determined. The antioxidant capacities were assessed by the TEAC and FRAP methods⁽¹⁾.

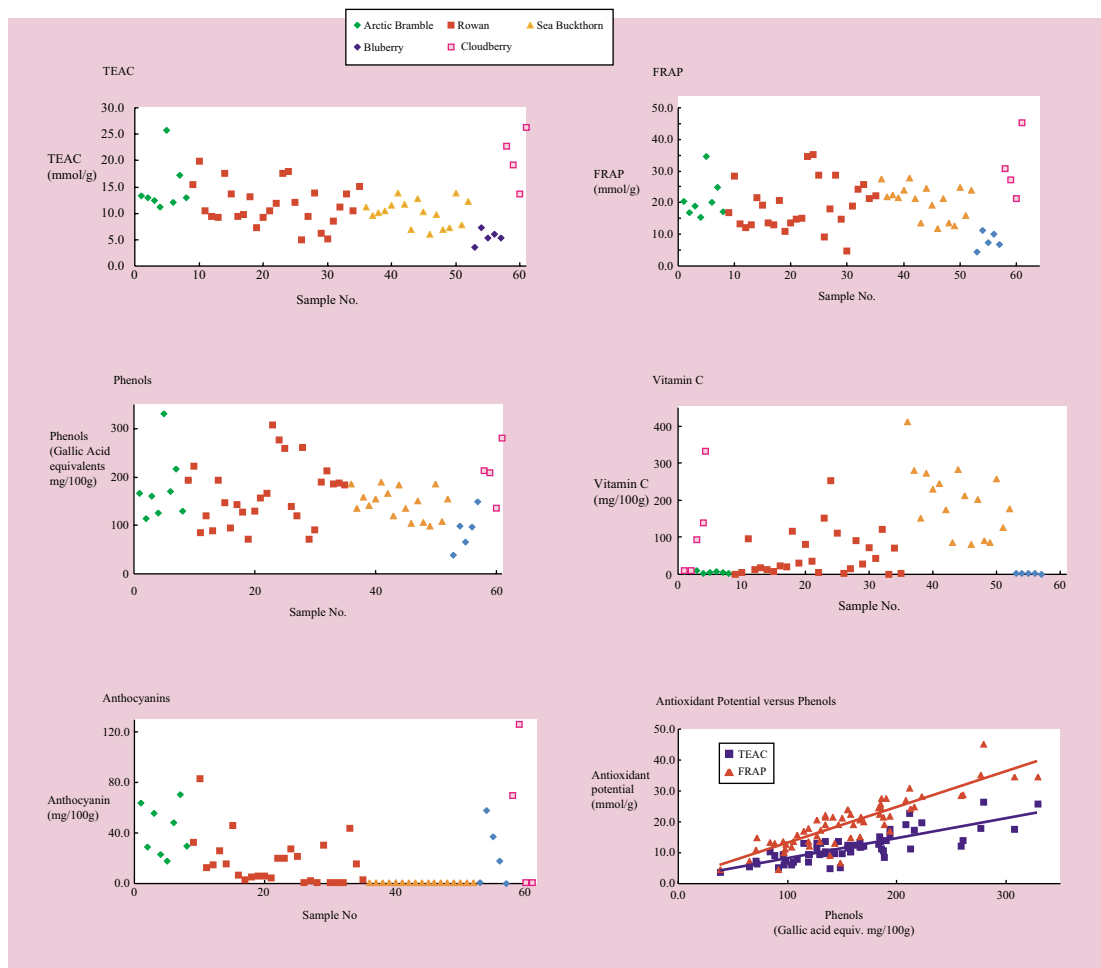


Results

It was clear that there was a significant variation in all the parameters measured both within and between species. Both the TEAC and FRAP methods produced similar patterns of antioxidant capacity although minor differences highlighted the sensitivity of each method to different antioxidant species.

Inter- and intra-species variation was evident. In particular, arctic bramble and rowan exhibited significant varietal differences in antioxidant capacity. This variation was derived from compositional differences. For example the difference between the highest and lowest levels of phenols, anthocyanins and vitamin C in the juices from rowan fruit were of the order of 4, 40 and 1200 fold, respectively.

The levels of vitamin C in arctic bramble and blueberry were negligible whilst sea buckthorn contained no measurable anthocyanins. (The colour in sea buckthorn is predominantly derived from carotenoids). However all the juices did have measurable levels of phenols with selected varieties of arctic bramble and rowan displaying high levels and varietal variation. The relationship between the antioxidant potential and the total phenol content was shown to be a direct one for both methods of measurement (TEAC and FRAP). This suggests that the parameter "total phenols" may best serve as a chemical marker for antioxidant capacity and could be used by breeders to produce new, more nutritious varieties.



References

(1) Deighton, N., Brennan, R., Finn, C. and Davies, H.V. (2000) Antioxidant properties of domesticated and wild *Rubus* species. *J. Sci. Food Agric.* **80**, 1307-1313.

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