

Effects of Cyanidin 3-Glucoside on Neuroprotection in Rats

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Introdução

Blackberry (*rubus* sp.) are rich sources of dietary phenolic compounds such as anthocyanins that may act as normal antioxidants in our diet. Previous reports have been done on blackberry anthocyanins, and their identities have been well-characterized as being solely cyanidin-based compounds¹. It is of great relevance to study thoroughly the actions of the glycosylated compounds since they are the native forms occurring in plant as well as in fruit extracts. The role of glucosides in diets has become even more significant as it was suggested that in the human and rodents gastrointestinal tract anthocyanins may be absorbed as glucosides into the circulation, and that they are able to cross the rat blood-brain barrier after supplementation, suggesting that these compounds can feasibly have a direct effect on brain processes².

The objective of this research, was to investigate the anthocyanins of *Rubus* sp. For the evaluation we tested the efficacy of cyanidin 3-glucoside extracted from berries on lipid damage in brain rats. Fruit were produced by Embrapa, Pelotas, RS. Identification and quantitation of each compound was based on retention time and UV spectra in HPLC-DAD (Waters 2690), by comparison with pure commercial standards of known concentrations, using a C18 reverse-phase column. For Cyanidin 3-glucoside extraction, the *Rubus* extract was separated on an analytical C-18 column; aliquots were repeatedly fractionated. The solvent was removed in a rotatory evaporator, redissolved in water and immediately administrated (3.2 mg/kg/day), oral of anthocyanins for 30 days. The experiments were performed according to the "Principles of Laboratory Animal Care and Use in Research". The animals were sacrificed by decapitation. Hippocampi, was dissected and stored at 70 °C for posterior analyses. As an index of lipid peroxidation, we used the formation of TBARS during an acid-heating reaction, which is widely adopted as a method for measurement of lipid redox state, as previously described. Results are expressed as nmol TBARS/mg protein^{3,4}.

We found that, the cyanidin3-glucoside, extracted from *rubus* significantly decreased lipid peroxidation processes in hippocampal tissues in basal conditions (Fig. 1). More relevant to this seems, cyanidin 3-glucoside may be an significant factor in maintaining neuronal integrity and preventing lipid peroxidation.

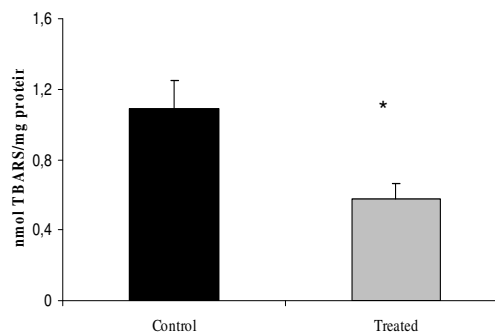
Conclusões

This results suggests that the purified cyanidin 3-glucoside is bioavailable and also of high physiological relevance. To the author's knowledge, his is the first study of efficacy of cyanidin 3-glucoside on neuroprotection.

Agradecimentos

CNPq, PROPESQ-UFRGS and FAPERGS.

Figure 1. Effects of chronic supplementation on lipid peroxidation in rat hippocampus.



Data are mean \pm SD of 10 animals per group performed in triplicate. * Different from the respective control group ap < 0.05 as determined by one-way ANOVA followed by Tukey's test

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Resultados e Discussão