HEMATOLOGICAL AND BIOCHEMICAL PROFILE OF FVB/N MICE SUPPLEMENTED WITH AN ANTHOCYANIN-RICH ELDERBERRY (*SAMBUCUS NIGRA* L.) EXTRACT

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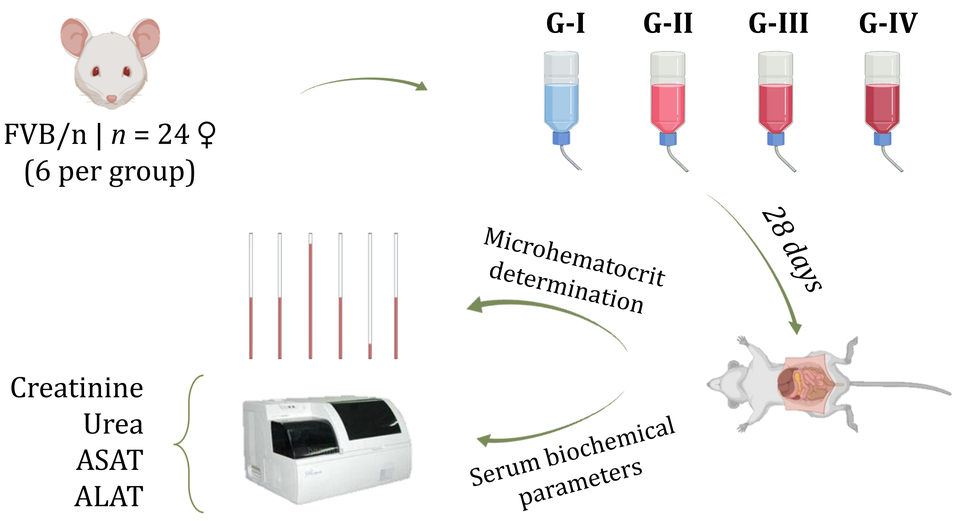
INTRODUCTION

Black elder (*Sambucus nigra* L.) is a common plant native from the northern hemisphere that spread all over the world.[1] It is rich in many phenolic metabolites, especially anthocyanins, which are known for their high colorant capacity and health benefits.[2]

This study aimed to analyze the effects of elderberry extract (EE) supplementation in mice's hematological and biochemical profiles.

EXPERIMENTAL DESIGN



MATERIAL AND METHODS

The HPLC-DAD-ESI/MS was used to determine the anthocyanin profile.

This study was approved by the University of Trás-os-Montes and Alto Douro Ethics committee (approval no. 10/2013) and the Portuguese Veterinary Authorities (approval no. 0421/000/000/2014). All animal procedures followed the national legislation (Decree-Law 113/2013) and European Directive 2010/63/EU on the protection of animals for scientific experiments. Twenty-four eight-week-old female FVB/n mice were divided into four experimental groups: G-I (control), G-II (12 mg/mL), G-III (24 mg/mL), and G-IV (48 mg/mL), with EE dissolved in drinking water for 28 days, and G-I received tap water. At the end of the experimental protocol, an overdose of ketamine/xylazine was administrated to sacrifice all animals, and the blood samples were collected directly from the heart.

Microhematocrit values were obtained after blood centrifugation (4500 x *g* for 5 min) in capillary tubes. Spectrophotometric methods were used to determine the concentrations of creatinine, urea, aspartate aminotransferase (ASAT) and alanine aminotransferase (ALAT) on plasma.

RESULTS & DISCUSSION

The primary anthocyanin components found in the extracted juice were cyanidin-3-*O*-sambubioside-5-*O*-glucoside, cyanidin-3-*O*-sambubioside and cyanidin-3-*O*-glucoside.

The microhematocrit values showed no statistically significant differences between groups. When compared to the literature, our findings on renal function markers, particularly urea levels in G-II (p=0.011), were contradictory.[3, 4]

Table I. Microhematocrit (Ht) and serum biochemical parameters (mean ± standard error).

	G-I	G-II	G-III	G-IV
Ht (%)	45.03 ± 0.70	45.65 ± 0.57	46.59 ± 0.75	45,80 ± 1.20
Creatinine (mg/dL)	0.188 ± 0.06	0.380 ± 0.17	0.493 ± 0.29	0.592 ± 0.22
Urea (mg/dL)	39.18 ± 1.31	49.16 ± 2.19 [a]	45.05 ± 2.31	41.10 ± 1.75
ALAT (U/L)	38.92 ± 2.74	40.24 ± 3.67	40.80 ± 3.81	42.70 ± 3.16
ASAT (U/L)	98.47 ± 10.74	108.62 ± 8.92	90.67 ± 14.39	107.04 ± 7.44

[a] Statistically significant different compared to G-I ($p < 0.05$).

Because urea levels can rise in settings unrelated to renal disease, creatinine is generally regarded as a more accurate indicator of renal function.[5] Creatinine levels were slightly increased but were not statistically different between groups, implying that more research is needed to understand the extract's impact on kidney function.

CONCLUSION

In conclusion, our findings indicate that an anthocyanin-rich EE does not appear to impair liver or renal function, making it an appealing alternative to synthetic colorants. Future studies, such as histological analysis, will be performed to confirm the favorable toxicological profile of EE.

References:

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