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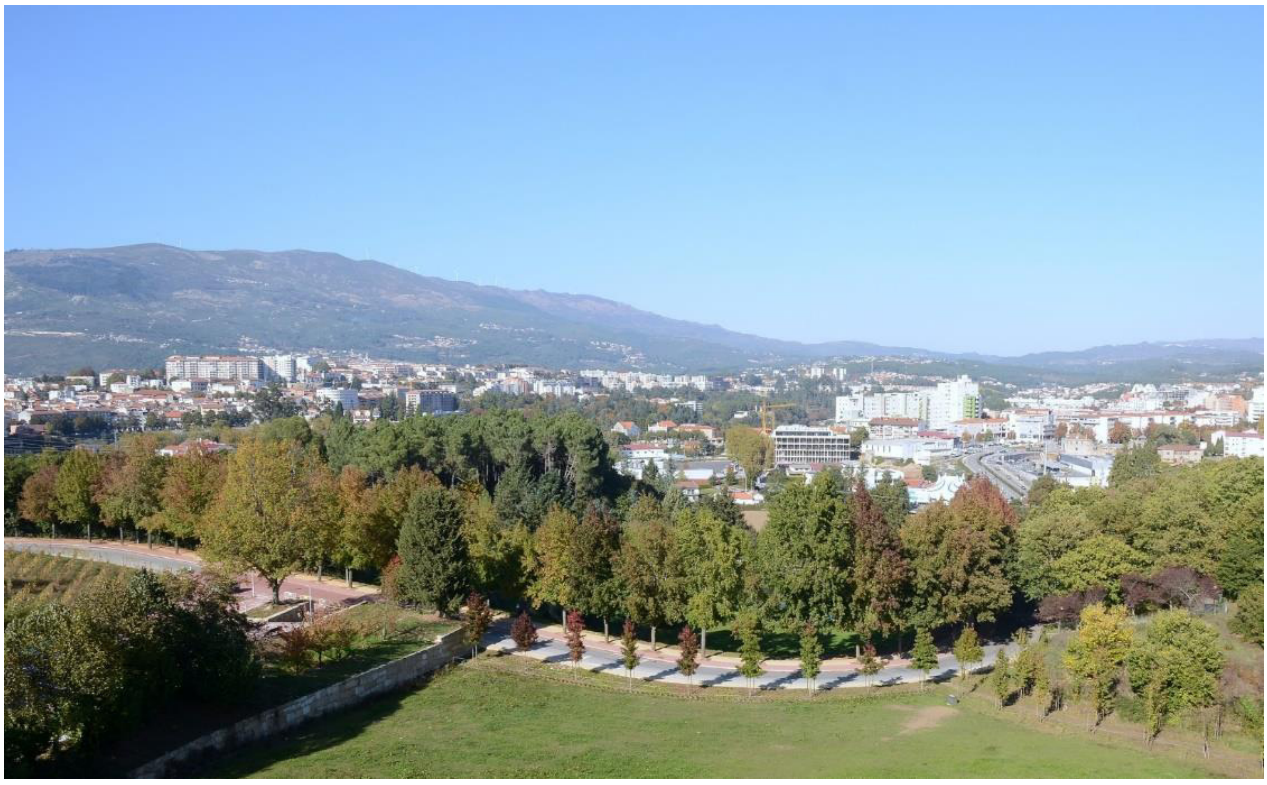

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IMPACT OF AMMONIACAL NITROGEN ON THE CENTESIMAL COMPOSITION AND CHEMICAL PROFILE OF *PORTULACA OLERACEA* L.

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Purslane (*Portulaca oleracea* L.) is a wild edible plant that is highly appreciated for its therapeutic properties. Its leaves and stems are commonly consumed as juices, as well as raw or cooked in salads. Recently, purslane has been classified as a functional food due to its high nutritional value, which has generated great interest in its production through commercial cultivation [1-2]. It is a species highly adaptable to various adverse conditions, which makes it a promising species for cultivation under environmental stressors. Nitrogen fertilization plays an important role in the development of primary and secondary plant metabolites. Moreover, several studies indicate that the form of the nitrogen source can affect the final content and the profile of the compounds produced [1,3]. Therefore, the objective of this study was to evaluate the effect of different percentages of ammoniacal nitrogen in fertilization on the centesimal and chemical profiles of *Portulaca oleracea* leaves and stems using AOAC and chromatographic methods. The results showed that purslane leaves contained higher amounts of total fat and protein, while stems contained higher amounts of total dietary fiber and carbohydrates. Oxalic, succinic, and fumaric acids were also identified in all the samples, whereas only the α-tocopherol isoform was present in purslane tissues. Stems contained fructose, glucose, sucrose, and trehalose, whereas leaves contained only fructose and glucose. Linoleic acid was mostly found in the stems, while linolenic acid was more prevalent in the leaves. Based on this preliminary study, it was observed that the amount of ammoniacal nitrogen had an impact on valuable macronutrients, namely crude protein, and total dietary fiber suggesting that tailor made nutrient solution may increase the quality and the nutritional value of the edible product.

References

[1] E. Fontana, J. Hoeberechts, S. Nicola, V. Cros, G. B. Palmegiano, and P. G. Peiretti, *J Sci Food Agric*, 86 (2006) 2417–2424.
[2] S. Petropoulos, A. Karkanis, N. Martins, and I. C. F. R. Ferreira, *Trends Food Sci Technol*, 55 (2016) 1-10.
[3] Y. Zhang, X. Lin, Y. Zhang, J. Z. Shao, and S. Du, *Journal of Plant Nutrition*, 28 (2007) 2011–2025.

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