



**5th Portuguese Young
Chemists Meeting**
(5th PYChem)
&
**1st European Young
Chemists Meeting**
(1st EYChem)

Centro Cultural Vila Flor
Guimarães, Portugal
26th – 29th of April



ICVS/3B's
Associação
Química
de Portugal



Câmara Municipal de Guimarães





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General Programme

	26 April	27 April	28 April	29 April
9:00-13:20	Registration and Workshop of Open Science and European Open Access Policies in H2020	Organic Chemistry and Medicinal Chemistry	Inorganic, Physical, Analytical and Electrochemistry	Materials Chemistry and Nanomaterials and Surface Chemistry
13:30	Opening Ceremony	Lunch	Lunch	Lunch
14:00 - 18:00	Green Chemistry + Chemistry of Natural Products	Biochemistry and Medicinal Chemistry	CHEM2NATURE Symposium: Chemical strategies for modification of natural origin materials Assembleia GQJ (17h)	Materials Chemistry and Nanomaterials and Surface Chemistry
18:00		Walking Tour		Closing Ceremony
19:00	Welcome Cocktail		Gala Dinner	
21:30	Get-together night			



P14. Effects of gamma radiation in mycotoxin decontamination of *Aloysia citrodora* Paláu

Eliana Pereira^{1,2}, Lillian Barros¹, Amílcar L. Antonio¹, Sandra Cabo Verde³, Isabel C.F.R. Ferreira¹, Paula Rodrigues¹

Corresponding Author: iferreira@ipb.pt

¹Centro de Investigação de Montanha (CIMO), ESA, Instituto Politécnico de Bragança, Portugal

²GIP-USAL, Facultad de Farmacia, Universidad de Salamanca, Spain

³C2TN - Centro de Ciências e Tecnologias Nucleares, IST, Universidade de Lisboa, Portugal

The interest and demand for aromatic and medicinal plants have been growing due to their combined organoleptic and bioactive properties. However, in general these plants suffer natural contamination by fungi and associated toxins during growth as also in harvesting, storage and drying processes, which represents a threat to public health. The rigorous standards required by the industrial sector in terms of good quality of raw materials demand efficient decontamination procedures [1-3]. Gamma radiation is assumed as an accredited methodology for the decontamination of medicinal and aromatic plants, with numerous advantages not only to the product itself but also to the consumer and the environment [4].

In this study, efficient methods for detecting aflatoxins (AFB₁, AFB₂, AFG₁ and AFG₂) and ocratoxin A (OTA), were optimized and validated, and afterwards, applied to spiked samples of *Aloysia citrodora* Paláu submitted to gamma radiation treatment at different doses (1, 5 and 10 kGy), to evaluate the effectiveness of irradiation as a decontamination technique for dry plants. Mycotoxin levels were determined by reversed-phase high-performance liquid chromatography (HPLC) with fluorescence detection, after immunoaffinity column (IAC) cleanup. All the applied gamma radiation doses conducted to a degradation of the studied mycotoxins. In relation to the control sample (0 kGy), the reduction rates in the irradiated samples ranged from 4.9 and 5.2% in OTA, 5.3 and 9.6% in AFB₁, 12.3 and 13.5 in AFB₂, 16.4 and 23.6 in AFG₁ and, finally, 52.6 and 62.7% in AFG₂. The gamma radiation dose of 5 kGy stood out as the best decontamination dose for AFB₁ and AFG₁, which are the most significant aflatoxins naturally found in food commodities. For OTA, AFG₂ and AFB₂ there was no significant difference in decontamination between doses. In conclusion, the extraction and analysis methods proved to be suitable for detection of aflatoxins and ocratoxin A in *A. citrodora*. Gamma radiation seems to be an effective technique for reducing aflatoxins G in *A. citrodora*, and eventually other medicinal and aromatic plants. On the other hand, aflatoxins B and OTA are less affected by this treatment.

References

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- [3] Wan Ainiza, W.M.; Jinap, S.; Sanny, M., *Food Control* 2015, 50, 913-918.
- [4] Alotman, M.; Bhat, R.; Karim, A.A. *Trends in Food Science & Technology* 2009, 20, 201-212.

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