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ANTIOXIDANT AND HEPATOTOXIC ACTIVITIES OF GAMA IRRADIATED BORUTUTU

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Borututu is a well-known medicinal plant in Angola for the treatment of liver diseases. Our research group reported, in recent studies, that its infusion, pills and syrups display significant antioxidant and anti-hepatocellular carcinoma activities [1,2]. In order to preserve the safety of this medicinal plant, which can be compromised during the processing and storage period, gamma irradiation arises as a safe technology to avoid the contamination with pathogens in alternative to the traditional chemical fumigation. In the present study, we aimed to investigate the effect of different doses of gamma irradiation (1 and 10 kGy) on this plant regarding to the mentioned bioactive properties; therefore, infusions and methanolic extracts prepared from the irradiated plant were evaluated for their antioxidant activity (DPPH scavenging activity, reducing power, β-carotene bleaching inhibition, and TBARS formation inhibition), anti-hepatocellular carcinoma activity (HepG2 tumor cell line) and hepatotoxicity (non-tumor liver cells primary culture). In a general way, the infusion and methanolic extract obtained from the sample irradiated at 10 kGy had a higher antioxidant activity in all the assays performed, with better results for the methanolic extract (EC_{50} values ranging from 0.04 and 0.24 mg/mL) when compared to the infusion (0.03-1.34 mg/mL). All the methanolic extracts revealed anti-hepatocellular carcinoma activity with a slightly decrease in the sample irradiated at 10 kGy (GI_{50}=188.97 μg/mL) relatively to the control sample (GI_{50}=160.02 μg/mL). None of the infusions or methanolic extracts revealed toxicity in non-tumor porcine liver cells (GI_{50}>400 μg/mL). According to the results obtained for the antioxidant and anti-hepatocellular carcinoma activities, the risk of limiting these properties due to the irradiation at the tested doses can be excluded, making the gamma irradiation a suitable technique for borututu preservation.

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1. C. Pereira, R.C. Calhelha, L. Barros, I.C.F.R. Ferreira (2013); *Ind. Crop. Prod.* **49**, 61-65.
2. C. Pereira, R.C. Calhelha, L. Barros, M.J.R.P. Queiroz, I.C.F.R. Ferreira (2014); *Ind. Crop. Prod.* **52**, 709-713.

POSTER SESSION

RADIATION TECHNIQUES

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1	Carla Pereira[1], Ricardo C. Calhelha[1,2], Amilcar L. Antonio[1,3], Maria João R.P. Queiroz[2], Lillian Barros[1], Isabel C.F.R. Ferreira[1,*] *CIMO/ESA, Instituto Politécnico de Bragança, Portugal* *[2] Centro de Química, Universidade do Minho, Portugal* *[3] IST/ITN, Nuclear and Technological Institute, Portugal*	ANTIOXIDANT AND HEPATOTOXIC ACTIVITIES OF GAMA IRRADIATED BORUTUTU
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5	Wojciech Głuszewski[1], Zbigniew P. Zagórski[1], Maria Rajkiewicz[2] *Institute of Nuclear Chemistry and Technology, Warsaw, Poland* *[2]Institute for Engineering of Polymer Materials and Dyes, Poland*	RADIATION MODIFICATION OF ETHYLENE-OCTENE COPOLYMER
6	Urszula Gryczka[1], Armando Buttafava[2], Daniele Dondi[2], Wojciech Migdał[1] [1]Institute of Nuclear Chemistry and Technology, Poland [2]Department of Chemistry, University of Pavia, Italy	RADIATION INDUCED MODIFICATION OF WILLOW BIOMASS