Title: Preliminary characterization of 5 types of craft beer from Extremadura (Spain)

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Keywords: Brewing, craft beer, antioxidant activity

I. Abstract Body (up to 250 words)

Beer is one from the most popular alcoholic beverages worldwide. In recent years, there has been an increasing interest on the production of beers brewed in the region of Extremadura, South West of Spain. The characterization of different commercial craft beers is needed in order to entering the market. This study describes the differences between five different types of craft beers from Extremadura, (Stout, Strong ale, Double Ipa, Ipa and Blonde ale). The ain of this study was the physico-chemical characterization of craft beers from the region of Extremadura and the study of *in vitro* antioxidant activity.

In this work, color (a*-value), pH, alcoholic degree (Schmidt-Hebbel , 1966), turbidity (FTU) and bitterness (ºIBU) were analyzed. The antioxidant activity of the beers was based on DPPH antioxidant activity (Broncano et al., 2011).

All the types of beer showed pH under 4.5 and the alcoholic degree between 6º and 9º. Considering that no pasteurization was carried out during brewing, the combination of low pH and high alcoholic degree acts as a technological barrier in this kind of products without a heating process (Leistner & Gorris, 1995). Turbidity was high in all beers due to the lack of filtration (Bamforth, 1993). Regarding bitterness, the beers with more amount of added hop, Double Ipa (0.51%) and Ipa (0.48%), showed higher bitterness values than Blonde ale (0.09%) and Strong ale (0.08%), with lower hop concentration. Finally, Stout craft beer showed the highest antioxidant activity (34.5%) .

II. Image:



III. Reference:

1 Bamforth, C. W.; Muller, R. E.; Walker, M. D. (1993). "Oxygen and oxygen radicals in malting and brewing: A review." Journal of the American Society of Brewing Chemists, 53: 79–88.

2 Broncano JM, Timón ML, Parra V, Andrés AI, Petrón MJ, 2011. Use of proteases to improve oxidative stability of fermented sausages by increasing low molecular weight compounds with antioxidant activity. Food Res Int, 44: 2655–2659.

3 Leistner, L.; Gorris, L.(1995); "Food preservation by hurdle technology". Trends in Food Science & Technology, 65, 41-46.

IV. Biography:

MJ Petrón has completed his PhD at Extremadura University and Postdoctoral Studies at the Ghent Universtiy (Belgium). She is a Senior Professor at the Agricultural Engineering School in Extremadura (Spain). She has published more than 25 papers in reputed journals

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