XXII Encontro Luso-Galego

Química

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Distillation process characterization for honey spirit production

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Honey presents a higher amount of carbohydrates (60-82%) [1] mainly fructose and glucose and other minor compounds (proteins, enzymes free amino acids, essential minerals, vitamins and polyphenols). Given their higher amount of sugar, yeast could be convert them into alcohol through the process of fermentation. The more usual alcoholic beverage produced from the honey is mead, however, some spirits are also produced, but no scientific research is known in order to characterize this beverage. The aim of this work is to characterize the distillation process of honey spirit resulting from distillation of mead obtained from different honey raw material: *Lavandula* honey; *Castanea* honey and a mixture of waxes and honey resulting from the bee-keeper uncaps process.

In the distillation process different fraction were collected during the time. The alcohol strength was determined by distillation and electronic densimetry. The volatile compounds of the samples (acetaldehyde; ethyl acetate; methanol; 1–propanol; 2-methyl-1-propanol; 1–butanol and isoamyl alcohols) were analysed by gas chromatography-flame ionization detection (GC-FID) [2].

The honey spirit does not present methanol in the majority of the analysed fractions or it is present in a very low quantity (<0.062 g/L) what is an advantage of this beverage in comparison with other distillates. The raw-material used in the production of the beverage as well as the distillation time has a significant effect in the composition of the fractions collected during the distillation process (Table 1).

The different volatile profile suggests a different quality given the botanical origin of honey used as raw material. The production of honey spirit from waxes and honey resulting from the uncap process has a good quality.

Table 1. ANOVA results. Effect of raw material and distillation time on the honey spirit

Determination	Raw-material		Distillation time		Interaction		Residual
	Sig.	Var(%)	Sig.	Var(%)	Sig.	Var(%)	Var(%)
Alcoholic strength (%v/v)	0.0000***	5.3	0.0000*	93.2	0.0064**	1.0	0.5
Acetaldehyde (g/L)	0.0000***	5.8	0.0000***	76.8	0.0000***	16.0	1.4
Ethyl acetate (g/L)	0.0191*	0.3	0.0000***	91.8	0.0000***	7.3	0.5
1-Propanol (g/L)	0.0000***	4.2	0.0000***	92.2	0.0240*	0.5	3.1
2-Methyl-1-propanol (g/L)	0.0000***	7.6	0.0000***	89.4	0.0000***	2.7	0.4
1-Butanol (g/L)	0.0006***	14.5	0.0000***	64.1	0.0198*	12.8	8.6
Isoamyl alcohols (g/L)	0.0000***	5.9	0.0000***	92.0	0.0003***	1.8	0.4

Sig. – significance level; Var(%) – Variance percentage; n.s. – not significant, p > 0,05; * Significant, 0.01 < p <0.05; ** very significant, 0.001 < p < 0.01; *** highly significant, p < 0.001

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