# BOOK OF ABSTRACTS

5TH MEETING OF YOUNG RESEARCHERS OF UNIVERSITY OF PORTO

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# CREDITS

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# *Saccharomyces cerevisiae* brewing biomass as a promising source of nucleotides for *flavour* enhancers production

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*Saccharomyces cerevisiae* biomass surplus is the second by-product from brewing industry. Due to the global pressure towards sustainable environmental technology, an alternative use to this by-product is paramount. Yeast is often reused for four to six times in wort fermentation. Yeasts contain between 6-12% RNA and DNA [1-3]. For this reason, several research groups have been dedicated to the selection of specific strains rich in nucleic acids and optimized methods of production of *flavor* enhancers, namely, 5'IMP, 5' GMP and 5'AMP. On the other hand, since the yeast contains a wide variety of nucleases, the optimization of the conditions of RNA autolysis provides a high yield of production of different nucleotides isomers, as well, as nucleosides and nucleobases [4].

The goal of this work was to evaluate the composition in nucleotides of brewer's yeast biomass presenting different reuses in order to estimate potential application of yeast extracts as food ingredients with *flavor* enhancer properties.

Experimental planning included the analyses of 48 yeast samples, ranging from zero to seven reuses. After yeast disruption using 0.6 mm glasses beads, followed by RNA hydrolysis under the experimental conditions optimized (24 hours, 60°C, pH 5), 5 nucleosides and 9 nucleotides were quantified, using a HILIC methodology, previously validated and optimized. Total RNA content was quantified by spectrophotometry.

The RNA levels quantified in the yeast biomass varied between 4-8% (dry weight). 2'AMP and 2'GMP were the major compounds in yeast biomass hydrolysates, representing 47.4%±3.6 (RSD=7.7%) of total nucleotides quantified. These results are consistent with those obtained by other authors [4-5]. Nucleotides 5'AMP, 5'GMP and 5'IMP represented 28.95%±2.6% (RSD=9.1%) of total nucleotides. Concerning to nucleosides, the predominant compounds were guanosine (0.092±0.024g/100g dry weight (RSD=25.72%) and adenosine (0.035 ± 0.002g/100g dry weight (RSD= 5.626%).

In conclusion, 5'AMP, 5'IMP e 5'GMP that present *flavor* enhancer properties represent less than 30% of the total nucleotides, thus, it is important to improve the yield of formation of these compounds by external addition of 3'RNAases.

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