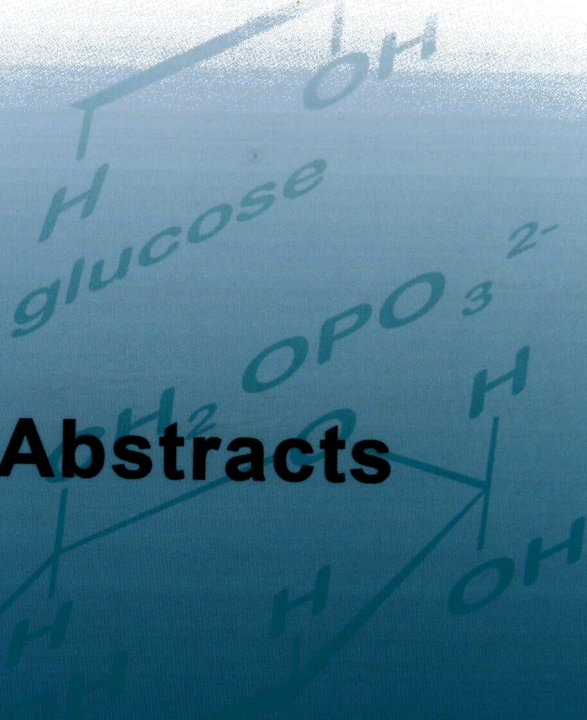
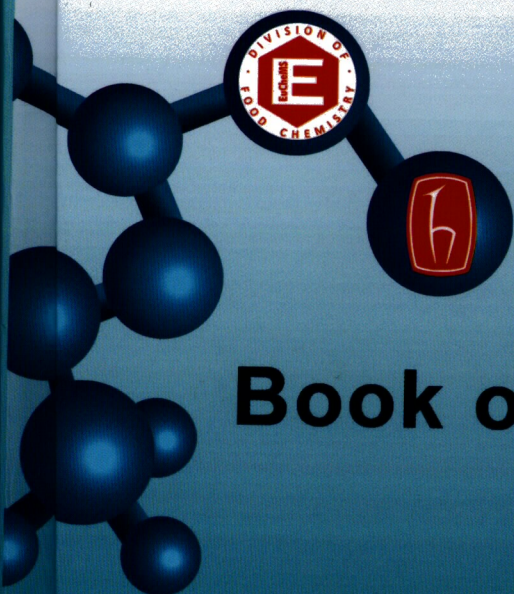
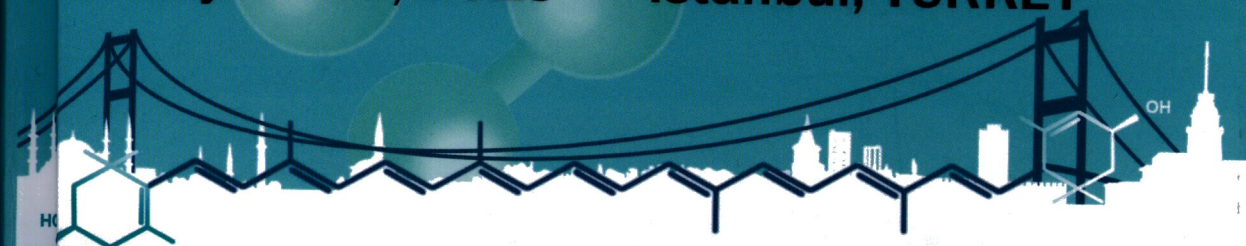


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HYDROXYMETHYLFURFURAL AND FURFURAL IN DIFFERENT TYPES OF BEER

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Furan derivatives are actually receiving increased attention. On one hand, these compounds contribute to the flavor of foods and beverages, but on the other hand, they are associated to potential harmful effects on human health. During brewing, Maillard reaction and caramelization occur as roasting proceeds at high temperatures up to 250 °C leading to the formation of hydroxymethylfurfural (HMF) and furfural [1]. However, some preliminary experiments indicate that HMF levels in beers are relatively low (<5 mg/L) even though significantly higher levels (>1000 mg/kg) may form in dark roasted malts [2].

Around the world different types of beer are produced. There is no universally agreed list of beer styles as different countries and organisations have different sets of criteria. In general they are categorized into one of three different categories: lagers, ales, and the rest fall into specialty beers. Specialty beers are either ales, lagers, or a hybrid of the two that will contain other ingredients that cause it to not fit into a true ale or lager style. Due to different malt composition, addition of adjuncts, rich in sugars and brewing conditions a wide variety of beer styles are produced. Considering that it is expected variation of the content of HMF and furfural. Thus, the goal of this work was to screen the content of HMF and furfural in different types of beer commercially available in Portuguese market.

Reversed-phase HPLC with Diode Array detection was used to determine the contents of HMF and furfural in 50 samples of beers randomly purchased from market including pilsner, stout, weiss, dunkel, among others. Some samples were alcohol free beers. Prior furan determination, beer samples were filtered through 0,45 µm syringe filters and degassed by sonication. The quantification was performed by external standard calibration method. HMF was detected in the 50 beers analyzed, however, low variation was observed, because content ranged between 2.07 and 7.79 mg/L and the average value was 5.34±1.73 mg/L. Furfural was not detected or detected in very low concentrations.

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