Determination Of Some Physiochemical Parameters, Aroma Content, Antioxidant And Antibacterial Activity Of Anatolian Pine Honeys

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Honey is one of the world's most valuable foods for nutrition and diet. Due to the forest fires in Turkey in recent years, Pine Honey has become a type of honey that is rarer than ever before and its importance is well understood. The aim of this study was to investigate 10 different pine honey samples produced in different sub region of Western Mediterranean in Turkey regarding their physiochemical parameters, aroma content, antioxidant and antibacterial activity against five food-borne pathogens. For all honey samples, measurements were made according to European Honey Quality Criteria. Moisture content, pH value and free acidity averaged 17.5%, between 3.0 to 5.7 and 23.2 to 84.5 meq/kg, respectively. Electrical conductivity values ranged between 0.08 and 1.78 mS/cm, averaging 1.07 mS/cm. Hydroxymethylfurfural value was ranged from 35 to 50 ppm. All samples showed relatively low diastase activity. Fructose and glucose concentration was ranged from 35.7 to 40.5%, and 28.3 to 30.7%, respectively. The average value of accumulated H2O2 in 30% of honey solutions after 24 h was 2.3 µM and ranged from 1.2 to 4.4 µM. The average results for proline which has the most abundant free amino acid in different pine honeys mean ranged of proline from 20 mg/100g to 45 mg/100g. The total phenolic content was estimated to be 51 mg GAE/kg. The antioxidant activity by 2,2-diphenyl-1-picrylhydrazil (DPPH) of pine honeys was also measured ranged from 22.3 to 83.5%. The most abundant aromatic component in all of the pine honey samples was linalool with an average of 23%. Antibacterial activity of most common food-borne pathogens include Listeria monocytogenes, Salmonella Typhimurium, Staphylococcus aureus, Escherichia coli and Bacillus cereus was determined using MIC measurement in broth. Honey samples showed high antibacterial activity against all tested bacterial strains.