

QUANTIFICATION OF FRUCTOSE AND GLUCOSE BY HPLC-UV AND OSAZONE DERIVATIZATION

Honey consists of majority of carbohydrates, in particular fructose and glucose, and minor components like water, vitamins, pollen and other substances. The amount of carbohydrates present in honey depends on the source of nectar, type of plants and the environmental conditions. The amount of fructose and glucose can be as high as about 70 - 80 % of total composition. Fructose has a lower glycemic index compared to glucose which potentially could have a significant effect on people with diabetes. In addition, consumption of products with high levels of fructose and glucose can lead to weight gain. Different types of honey have different amounts of glucose and fructose present. However, on the list of ingredients in honey only the total amount of sugar is given but not the individual amounts of fructose and glucose. So, in this research project individual concentrations of glucose and fructose in various honey samples will be analyzed using reverse phase HPLC (High Performance Liquid Chromatography) and the formation

of osazone derivatives. UV-HPLC was used to separate glucose and fructose, which co-elute, from other components that also absorb at the 195 nm detection wavelength. Osazones were formed to find the mass of total glucose and fructose in five honey samples by derivatization with phenylhydrazine hydrochloride which caused the sugars to selectively precipitate. Osazones of glucose and fructose have different times of precipitation, fructose crystals form at about 2 minutes and Glucose at about 5 minutes. Using the total mass and absorption data from HPLC analysis, the amounts of fructose and glucose will be determined mathematically. Fructose and glucose masses obtained from the osazone method will be used to compare the masses determined from HPLC-UV.

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