

GLASS TRANSITION TEMPERATURE AND VISCOSITY VALUES OF SEVERAL HONEYS PRODUCED IN TURKEY

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Research was conducted on total twenty-seven of honeys provided that by providing three different producers pine, flower, sunflower, citrus, cotton, chesnut, astragalus (coneflower) honeys the production of seven different region of Turkey. Glass transition temperatures (T_g) were determined by Differential Scanning Calorimetry (DSC). The T_g values of honey samples were ranged from -37.23°C and -45.30°C. There is no crystallization and melting peak in studied honeys. All of the honey samples showed amorphous structure. The viscosity of honeys was measured at 25°C, 35°C and 44°C. It was found that viscosity varied between 0.39 and 10.34 Pa.s according to kind of honey and the temperature of measurement. Honeys exhibited Newtonian behavior with reducing viscosity as increasing temperature. Arrhenius equation was used to express the variation of viscosity with temperature. The activation energy and the constant μ_0 of the Arrhenius equation were determined as a function of temperature from regression analysis of the experimental results. Activation energy varied between 78.62 and 95.81 kJ/mol.

Keywords: Honey, glass transition temperature, differential scanning calorimetry, activation energy, viscosity

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