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Quality assessment of fennel honey in Upper Egypt

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Submitted by

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ABSTRACT

This study was conducted during flow season of fennel honey in the year, 2018, to assess some quality properties of the Egyptian fennel honey from Upper Egypt. Forty two honey samples were obtained from different apiaries located in Assiut and Qena Governorates, Upper Egypt. The results recorded that, all honey samples were classified as unifloral with a percentage ranging between 95 and 99% of fennel pollen. The general mean of colour intensity was 0.986, with range from 0.71 to 1.77. Optical density (O.D.). Electrical conductivity (EC) was 0.02 %, with range between 0.015 and 0.03 %. Specific gravity was 1.414 g/ml, with range from 1.407 to 1.424 g/ml. Viscosity was 133.007 poise, with range between 119.8 and 145.3 poise. Total soluble solids (T.S.S.) %. was 81.68 %, with range from 80.5 – 83.0 %.Granulation was 0.701 with range between 0.60 and 0.79. All fennel honey samples can considered as safe honey not able to ferment. Moisture content was 18.395%, with range between 17.0 and 19.5%.The total acidity was 38.61 meq. /kg, with range from 25.5 to 48.0 meq./kg. Fructose content was 44.571%, with range between 41.1 and 49.8%. Glucose content was 31.195%, with range from 24.4 – 33.2%. Trace amounts of sucrose were detected in most of fennel honey samples with an average of 0.9%. Maltose content was 1.176%, with range between 0.6 and 1.6%. Hydroxy methyl furfural (HMF) content was 4.96 mg/ kg, with range from 1.92 to 7.68 mg/ kg. The diastase number was 54.31 Goth units, with range between 8.5 and 150.0 Goth units. The invertase content was 167.34 unit/kg, with range from 117.6 to 219.3 unit/kg. Glucose oxidase activity was 393.13 $\mu\text{g H}_2\text{O}_2$ /h.g, with range between 311.4 and 481.58 $\mu\text{g H}_2\text{O}_2$ /h.g. The minimum inhibitory concentration of Egyptian fennel honey against *Bacillus cereus*, *Escherichia coli*, *Klebsiella pneumonia*, *staphylococcus aureus* and *streptococcus agalactiae* were 15.36, 14.29, 22.5, 11.79 and 15.36%, respectively. Egyptian fennel honey have potent antibacterial efficacy against the resistant examined bacterial strains.

Key words: Egyptian fennel honey, physical, chemical, properties, antibacterial