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LIST OF ABBREVIATIONS

1-T.S.S.	Total Soluble Solids .
2-S.A.S.O.	Saudi Arabia Standard Organization .
3-A.O.A.C.	Association of Official Analytical Chemists.
4-W.I.S.	Water Insoluble Solids.
5- N.D.	Non Detectable.
6- L.O.D.	Limited Of Detected.
7- H.M.F.	Hydroxy Methyl Furfural.
8- H.P.L.C.	High Performance Liquid Chromatography .
9- H.F.C.S.	High Fructose Corn Syrups.
10- N.B.H.	Native Bee Honey .
11- F.B.H.	Foreign Bee Honey.
12- G.C.	Gas Chromatography .
13- L.C-APCL-M.S.	Liquid Chromatography-Atmospheric Pressure Chemical Ionization Mas Spectrometry.
14- R.I.	Refractive Index .
15- E.C.	Electrical Conductivity.
16- O.D.	Optical Density.
17- C.P.	Centipoises.
18-F.A.O.	Food and Agriculture Organization.
19-M.R.L.	Maximum residual limit.

5-SUMMARY AND CONCLUSION

The present investigation was carried out in Food Science Department, Faculty of Agriculture, Minia University; Food Technology Institute, Agricultural Research Center, Giza, and Food Technology Research Laboratory, Assuit Agricultural Research station; within the period of April, 2000, until August, 2001 .

Kinds of honeys were collected from El-Minia and Assiut governorate. The honey kinds were collected from the beekeepers at the time of their extraction, the collected honey samples were freshly extracted unheated and unprocessed. The samples were subjected to the complete analysis, included, confirmation of the honey floral source for each honey kind (microscopically analysis), physical, chemical, minerals content and pesticides residues analysis at fresh conditions.

The studied honey kinds were storied at room temperatures (20.1°C) for one year at three months intervals. Some physical, chemical properties and pesticides residues were determined during the storage period.

1-General properties of the Egyptian studied honeys :

A – Microscopically analysis of honeys :

Identification of pollen grains with done through the comparison between the extracted honey pollen and the references of pollen grains (Sawyer, 1989). The microscopically analysis of sediment, indicates that, the main pollen sources of the Egyptian honeys were, clover (Trifolium alexandrumum), Citrus spp., cotton, (Gossypium barbadense), marjoram

(Majorama hotensis), Fennel flower, (Migella sativa) and some different pollen as like Zea mays, Helianthus annus.

B – Physical properties :

- 1- The total soluble solids of the Egyptian honeys ranged from 80.20 to 81.13%. Citrus honeys resulted the higher value, while marjoram honeys were in the lower value.
- 2- The refractive index was ranged from 1.4950 for citrus honey to 1.4923 for marjoram honey.
- 3- The colour value was varied from 0.155 to 0.458 O.D., citrus honey showed lighter in colour, while fennel flower honey was darker in colour.
- 4- The citrus honey had the highest value of viscosity (6700 C.P.). However, cotton had the lowest value of value (2833.33 C.P.)
- 5- The electrical conductivity was ranged from 268.28 in clover honey to 72828 US/cm in fennel flower honey and it reached, 344.25, 547.30 and 716.82 US/cm for citrus, marjoram and cotton honey.
- 6- The pH value was varied from 3.90 for clover honey to 4.36 for fennel flower honey.
- 7- The fennel flower honey had the highest value of water insoluble solids (0.092), followed by cotton honey (0.083), marjoram honey, (0.064), clover honey (0.050) and citrus honey had the lowest value (0.011%).

C – Chemical composition :

- 1- The moisture content of the Egyptian honey kinds was ranged from 18.05 in citrus honey to 19.53% in the marjoram honey.

- 2- Sugars analysis of the Egyptian honeys showed that, fructose was ranged from 33.97 to 42.85%, glucose content was varied from 30.06 to 35.43% and sucrose content was ranged from 2.55 to 4.14%. The fructose + glucose was varied from 65.8% for clover honey to 73.36% for cotton honey. The fructose / glucose ration of the studied honey kinds was ranged from 1.03 to 1.40. However the glucose / water ratio was : 1.54 in marjoram honey, 1.62 in cotton, 1.72 in clover, 1.75 in fennel flower and 1.97 in citrus honey.
- 3- The citrus honey had the highest energy value (304.56) followed by fennel flower honey (304.40), cotton honey (303.90), marjoram honey (299.89) and clover honey had the lowest value (276.40 k.cal).
- 4- The total nitrogen of the studied honey kinds was varied from 0.051 to 0.08%. Fennel flower honey had the highest value while, the lowest value noted in clover honey.
- 5- The clover honey had the lowest value of ash content (0.070). However, fennel flower recorded the highest value (0.338%).
- 6- The hydroxymethylfurfural (H.M.F.) content of the Egyptian honey kinds was ranged from 0.30 in cotton honey to 6.96 mg/kg in fennel flower honey and it reached, 1.84, 1.60 and 0.41 mg/kg in marjoram, citrus and clover honey.
- 7- Fennel flower honey was recorded the highest value of ascorbic acid (Vit.C.), 213.25 mg/kg. However, clover honey had the lowest value, 24.94 mg/kg.

8- The clover honey had the lowest value of total acidity (25.71), followed by citrus honey (27.95), marjoram honey (44.65), fennel flower honey (47.81) and the cotton honey had the highest value 48.44 meq/kg.

D – Minerals content of the studied honey kinds(mg/kg) :

- 1- The range of macro-elements in the studied honey kinds were (mg/kg). Potassium (101.22 to 2223.271); sodium (32.42 to 70.41); calcium (62.70 to 190.75), magnesium (15.95 to 66.08) and phosphorus (15.50 to 31.33). The fennel flower honey had the highest value of the most macro-element while the clover honey had the lowest value of the macro-element. The marjoram had the highest value of calcium.
- 2- The micro-elements and heavy metals determine in the Egyptian honey kinds showed that, the iron content ranged from 14.85 in fennel flower honey to 5.26 in clover honey, copper varied from 0.280 to 0.570, zinc ranged from 1.52 to 3.61, manganese varied from 0.083 in citrus honey to 0.473 in marjoram honey. The fennel flower honey had the highest value of cadmium (0.005), however the citrus clover, cotton and marjoram honey had the seam value of cadmium (10.002). citrus honey had the highest value of lead (0.090), followed by fennel flower and marjoram honey (0.070), the lowest value was recorded by clover and cotton honey (0.04 mg/kg).

E - Pesticides residues in the studied honey kinds :

- 1- The residues of the pesticides ($\mu\text{g}/\text{kg}$) in the fresh samples of Egyptian honeys were dimethoat (nd to 24), malathion, (20 to 110), trichlorafon (nd to 40), carbaryl (nd to 30), thiodicarb (nd to 25),

deltaamethrin (nd to 39) fluvalinate (30 to 80) and amitraz, (35 to 110). The cotton honey had the mostly pesticides residues. However, the fennel flower honey had the lowest pesticide residues.

- 2- After storage for 3 months at room temperature (18-28 °C). The pesticide residues in the honey kinds were decrease in all the kinds about 50%.
- 2- The pesticides residues in the Egyptian honey kinds i.e., citrus, fennel flower, clover, cotton and marjoram after 6 months at room temperature (20.1°C) were detected three pesticides residues, malathion (20, 15, 15, 45 and 20) fluvalinate in tow honeys clover and cotton (20 µg/kg) and amitraz in citrus honey only (20 µg/kg).

2 – Effect of storage on the Egyptian honey kinds :

A – Physical properties :

- 1- The pH value showed slightly decrease at room temperature after twelve months storage.
- 2- The colour increased with increasing the storage period and temperatures, from 0.223 to 0.269 after twelve months storage.

B – Chemical composition :

- 1- Sugars content were showed that fructose and glucose content increased during storage for one year at room temperature. However, the sucrose content decreased from 3.46 to 0.948% after storage for twelve months at room temperature (20.1°C).

- 2- Hydroxymethylfurfural content increased from 2.215 to 9.863 after storage for year at room temperature.
- 3- Total acidity showed slightly increase from 38.911 to 41.344 meq/kg when honey stored at room temperature for twelve months .

From these results of this studied

- 1-The according honeys to the Codex standard was citrus honey followed by cotton, clover, marjoram and fennel flower honey.
- 2- Storage honey for one year at room temperature showed slightly effect in physical and chemical composition.
- 3- Storage honey for one year at room temperature showed decrease in pesticide residues (about 50%).

So recommended storage honey at room temperature to lose the pesticides residues in honey before used.