

الآية

﴿وَأَوْحَىٰ رَبُّكَ إِلَى النَّحْلِ أَنْ اتَّخِذِي مِنَ الْجِبَالِ بُيُوتًا وَمِنَ الشَّجَرِ وَمِمَّا
يَعْرِشُونَ (68) ثُمَّ كُلِي مِن كُلِّ الثَّمَرَاتِ فَاسْلُكِي سُبُلَ رَبِّكِ ذُلًّا يَخْرُجُ مِن
بُطُونِهَا شَرَابٌ مُّخْتَلِفٌ أَلْوَانُهُ فِيهِ شِفَاءٌ لِلنَّاسِ إِنَّ فِي ذَٰلِكَ لَآيَةً لِّقَوْمٍ
يَتَفَكَّرُونَ﴾ (69) سورة النحل

Dedication

I dedicate this work to the

Soul of my Father,

Beloved Mother

Brothers and Sisters

Acknowledgment

I would like to express my sincere appreciation and gratitude to my supervisor Dr. Malik Abdalla Abdelrahman for his lucid design of this research and help throughout this work.

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ملخص البحث

أجريت الدراسة على ثلاثة عينات من عسل النحل وكان مصدر العينات من منطقة تلودي العينة (1) ومن ام دافوق والعينة (2) ومن منطقة جبال النوبة والعينة (3) . وكان الهدف من الدراسة معرفة الخصائص الكيميائية والفيزيائية لعينات العسل وقد تم تحديد الخواص الفيزيائية لها وهى الكثافة واللزوجة والتوتر السطحى والتوصيل الكهربى ومعامل الإنكسار, ووجد ان الكثافة للعينات على التوالى هى 1.3932, 1.3842, 1.3730 g/cm^3 واللزوجة 8.912, 2.356, 6.893 pa.s, والتوتر السطحى 59.6133, 62.799, 66.314 dyne\cm, والتوصيل الكهربى 0.10394, 0.12395 mScm^{-1} ومعامل الإنكسار 1.480, 1.493, 1.493.

وكذلك الخواص الكيميائية وهى تحديد نسب العناصر (Fe,Pb,K,Na,Ca) (w\w) التى تحتوى عليها العينات وقد كانت نسب العناصر للعينة (1) على التوالى (

والعينة (2) (60, 164, 61, 0.016267, 36.652) ppm (6.9357, 0.4407, 360, 112, 50) والعينة (3) (30, 4.6, 960, 0.0116, 18.675) . وتحديد نسب السكر (فركتوز وجلوكوز ومالتوز وسكروز) التى تحتوى عليها العينات وقد كانت نسب السكر فى العينة (1) على التوالى (13.12, 28.4208, 0, 0) والعينة (2) (26.4885, 35.253, 0.30204, 1.9208) والعينة (3) (39.745, 32.924, 0.3595, 0) .

وقد تم التأكد ان جميع العينات غير مغشوشة وذلك بطريقة كيميائية وفيزيائية. والطريقة الكيميائية هى عن طريق إثتر ثنائى الإيثيل والريزونسول حيث أنه لم يتحول الى برتقالى . اما الطريقة الفيزيائية عن طريق معامل الانكسار فإذا كان معامل الانكسار يساوى 1.49 فهذا يعنى ان العسل غير مغشوش وبالتالي جميع العينات معامل الانكسار لها تقريبا 1.49 عدا العينة (1) فمعامل الانكسار لها يساوى 1.48 . كما أوضحت الدراسة أن هنالك علاقة بين محتوى البروتين وخاصية التوتر السطحي .

Abstract

This study was aimed to investigate physiochemical properties of honey bee. Three samples of honey bee from Tlody (sample (1)), Umdafog (sample (2)), and Noba mountain (sample (3)) were investigated. The investigated physical properties were surface tension, density, refractive index, conductivity, and dynamic viscosity. The density of samples 1, 2 and 3 was 1.373, 1.3842, and 1.3932g\cm³ respectively, whereas, the respective viscosity of the samples was 2.356, 8.912, and 6.893pa.s . For the same samples, the surface tension was found to be 59.6133, 62.799, and 66.413dyne/cm, respectively, the conductivity was found to be 0.1516,

0.10394, 0.12395mS cm⁻¹, respectively whereas, the refractive index was found to be 1.48, 1.493, and 1.493, respectively. The investigated chemical properties were cationic contents, sugars contents. The concentration of Ca, Na, K, Pb, and Fe %w/w in the honey samples was as follow: sample (1) (50, 112, 360, 0.4407, 6.9357), sample (2) (60, 164, 61, 0.016267, 36.652), and for sample (3) it was (30, 4.6, 960, 0.0116, 18.675), respectively. The percentages of fructose, glucose, maltose and sucrose sugars in the samples were found to be as follow: (13.12, 28.42, 0, 0) for sample (1), (26.4885, 35.253, 0.30204, 1.9208) for sample (2), and (39.745, 32.924, 0.3595, 0) for sample (3). The purity of honey bee was also tested with two quick methods, physical and chemical methods. According to these methods all three honey samples were considered pure honey bee.

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