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Abstract

Chemical composition and anti-hemolytic activity of Algerian honey samples

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Abstract: The use of natural substances for medical purposes is associated with the earlier times of humankind. The present study compared the phenolic profiles and anti-hemolytic properties of two honey samples. The total phenolic content and the total flavonoid content were determined spectrophotometrically. The anti-hemolytic activity was tested in-vitro using human erythrocytes pretreated separately with honey samples and ascorbic acid in the presence of aluminium. Five different treatment groups were considered: untreated erythrocytes (negative control), aluminium treated erythrocytes (positive control), honey 1 + aluminium treated erythrocytes, honey 2 + aluminium treated erythrocytes, and ascorbic acid + aluminium treated erythrocytes. Samples were then evaluated by simultaneous measurement of cellular turbidity and hemoglobin. The results showed that Honey 2 contained the highest phenolic content with mean value of 1.55 ± 0.04 mg GAE/g while honey 1 showed a concentration of 0.63 ± 0.03 mg GAE/g. As with the phenolic content, honey 2 showed the highest levels of flavonoid content (0.17 ± 0.003 mg QE/g) when compared to honey 1 (0.075 ± 0.005 QE/g). Erythrocytes suspensions treated with honey samples, particularly honey 2 presented highest cell and hemoglobin values compared to that of ascorbic acid and positive control, whereas, ascorbic acid exhibited a prooxidant effect on cell and hemoglobin. The results of this study demonstrated a protective effect of honey against Al-induced erythrocytes hemolysis and hemoglobin degradation.

Keywords: Honey; ascorbic acid; aluminium; erythrocytes; hemoglobin.

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