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Chemical Composition and Biological Properties of Algerian Honeys

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Abstract : Honey is a hive food rich in carbohydrates and water and it also has a lot of nutrients (enzymes, minerals, organic acids, phytochemicals…). It is used in different nutritional and therapeutic fields. Algerian honey was studied for its physicochemical parameters, nutritional values (moisture, brix, pH, electrical conductivity, and amounts of HMF, proteins, proline, total phenolic compounds and flavonoids) and some biological activities (antioxidant, anti-inflammatory and enzymatic anti-browning). The antioxidant activities of the samples were estimated using different methods (ABTS, DPPH free radicals scavenging, reducing power, and chelating ferrous activity). All honeys were acidic (3.45≤pH≤4.65). The color varied from mimosa yellow to dark brown. The specific rotation was levorotatory in most honey samples, and the electrical conductivity, hydroxymethylfurfural, and proline values agreed with the international honey requirements. For anti-inflammatory activity, the results showed that the inhibiting capacity of the denaturation of the BSA of the honey analyzed varied from 15 to 75 % with a maximum of activity at the concentration of 0,5 mg/ml. All honey exhibited enzymatic anti-browning on different slices of fruits. In fact, the results showed that the controls have the greatest browning unit compared to the honeys studied and PPO and POD enzymes had the lowest enzyme activity. High significant correlations were found between the color of honey, its antioxidant content and its biological activities (antioxidant, anti-inflammatory and enzymatic anti-browning). The dark color of honey is a good indicator of the best biological properties, therefore, the best nutritional and therapeutic values.

Keywords : honey, physico-chemical parameters, bioactive compounds, biological properties
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