

Rheology of hair conditioner formulated with two different vegetable oils and pigment extract solution from *Syzygium cumini* L. fruit

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Introduction: Hair conditioners are cosmetics used to improve hair aspect. Natural oils as cotton and babaçu oil can be used for the development of these formulations, in order to increase the moisturizing property. Natural pigments obtained from fruit can substitute synthetic ones to diminish allergic reactions.

Objective: Evaluate the rheological characterization of two hair conditioners formulations obtained with cotton oil, babaçu oil and pigment from *Syzygium cumini* Linn fruit. **Methods:** Cotton oil samples were acquired from the private industry Taji and babaçu oil from informal trade in Palmas, Tocantins, Brazil. Formulation 1 (F1) was obtained using cotton oil, and Formulation 2 (F2) was obtained using babaçu oil. Both formulations were colored with anthocyanins (ACYS) extract solution of *Syzygium cumini* L. fruit obtained by acidified ethanol solution. Rheological characterization was carried out in a HAAKE (RS-1) rheometer at $32^{\circ}\text{C} \pm 2^{\circ}\text{C}$. The resultant flow curves were displayed on a XY plotter. For viscoelastic experiment, creep and oscillatory experiments were performed using cone-plate geometry with a HAAKE (RS-1) rheometer. All samples were analyzed after 1-month preparation. Data were analyzed using manufacture's software. Dynamic testing was performed using 1Pa stress (0,1-10Hz). Data were analyzed to give storage modulus G' and dynamic viscosity η' . **Results:** The hair conditioners obtained were light purple and glossy. The flow curve obtained demonstrates that the formulations presented similar flow curve with hysteresis area for both formulations and F1 showed lower apparent viscosity than F2. Creep curve indicates that both hair conditioners had similar viscoelastic characteristic showing disorganized structure. For each hair conditioner G' increased as η' decreased in frequency, characterizing viscoelastic behavior. Results for F1 and F2 shows that oscillatory parameters were lower for F1, indicating less structure and more mobile than F2. **Conclusion:** The results suggest that hair conditioners obtained with babaçu oil were more structured presenting more viscosity than hair conditioners obtained with cotton oil.

Keywords: Rheology, Hair conditioner, Cotton oil, Babaçu oil, Natural pigment.

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