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# ABSTRACTS

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**BIOTECHNOLOGIES, PRESENT AND PERSPECTIVES**

***CHANGE OF VISCOSITY OF A SUSPENSION OF  
COSMETIC PRODUCTS DURING ULTRAFINE  
GRINDING IN BEAD MILL***

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**Abstract:**

Rheological characteristics effect on emulsification, transportation and also ensure proper consumer properties (spreadability, uniform distribution and fixation on the surface). The suspension was prepared according to the recipe: pigment iron oxide red 120 – 40% and castor oil – 60%. The duration of grinding is 45 minutes (2700 s). During grinding, the bead mill chamber was sampled every 5 minutes (300 s) to measure the shear stress at different values of the shear rate.

The flow curves of castor oil and suspension were constructed and it was established that the nature of the flow does not change depending on the duration of the measurements. The dependence of the effective viscosity on the shear rate when grinding the suspension has a power-law character and confirms the non-Newtonian nature of the product and is defined as a linear plastic body.

The temperature dependence of the effective viscosity of castor oil and suspension was compared. The viscosity of both tested substances varies logarithmically for all investigated temperature values and is equal to 1,011 Pa·s for castor oil, which corresponds to the value in the manufacturer's specification, and 2,127 Pa·s for the suspension based on castor oil. The suspension under study has 2,1 times higher viscosity compared to castor oil, which is due to the high content of solids (40%) and the increase in the newly formed area during the ultrafine grinding process.

The obtained results make it possible to monitor and adjust the necessary parameters of the ultrafine grinding process to achieve the required product quality.

**Key words:** *bead mill, grinding, rheology, suspension, viscosity.*