

RHEOLOGICAL PROPERTIES OF DANWAKE FLOUR BLENDS FROM SORGHUM, WHEAT AND CASSAVA BASES

Diarra, M¹, Nkama, I² and Hamaker, B.R³.

¹Rural Economic Institute (IER), Food Technology Laboratory Sotuba, Bamako, Mali

²Department of Food Science and Technology, University of Maiduguri, Maiduguri, Nigeria

³Whistler Center for Carbohydrate Research, Department of Food Science, Purdue University, West Lafayette Indiana Polis, USA

The rheological properties of seven danwake flour blend formulations from sorghum, wheat and cassava bases were investigated. The different ingredients in the danwake were sorghum flour, cowpea flour, wheat flour, cassava flour, baobab leaf powder, and trona (sodium sesquicarbonate) (kanwa). The viscosity of the flour blends were determined using standard methods. The viscosity of the danwake flour blends decreased with the increase in shear rate, a case of pseudoplasticity. The viscosity also decreased with the increase in temperature for all of flour blends but increased with the increase in cowpea flour content in sorghum based danwake flour blends. The Power law indices obtained which were less than 1.00 ($n < 1.00$) confirmed the non-Newtonian and possibly pseudoplastic behavior of the pastes ($r = 0.89 - 0.99$). The Power law indices were significantly ($p < 0.05$) affected by the flour blend formulations and by temperature. The activation energies showed that pastes from sorghum based danwake with 7% cowpea and 30% cowpea gave the highest (32.27 MJ/mol) and the least (16.30 MJ/mol) sensitivity to temperature changes, respectively.

Contact us for full article. Email: info@agrosiencejournal.com