

A comparative rheological study of amaranth, wheat and chickpea doughs

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Legume flours due to their nutritional benefits (e.g., high levels of proteins, fiber, complex carbohydrates, micronutrients and vitamins) are ideal ingredients for improving the nutritional value of bread and bakery products. Although proteins has a major role in the quality breads, however, few studies related to the evaluation of doughs containing chickpea flour (or other legume flour) alone or blended with other ingredients have been published [1,2]. This work performs a comparative study of the flow properties of three different flours: wheat, amaranth and chickpea, at two temperatures. The flow curves showed shear-thinning behaviour although amaranth flour presented the higher values of viscosity and wheat flour de lower values, as it is shown in Fig. 1. The influence of the protein content in the three doughs was evaluated by means of step-up-step-down tests and frequency sweeps (Fig. 1). Amaranth flour presented the higher elastic modulus and the wheat flour the lower. This can explain the compactation observed in gluten-free bread [2]. The results of the flow studies are prone to the combination of cereal and legume flours in order to improve the taste and quality of gluten-free breads.

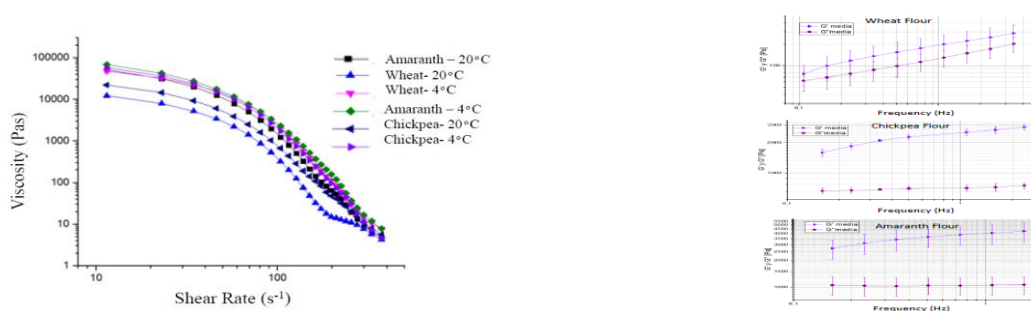


Figure 1. Left: Flow curves of amaranth, wheat and chickpea doughs prepared by mixing in water a 40 % weight of flour, at two different temperatures. Right: frequency sweep for the three flours.

Keywords: Gluten-free doughs, Rheological properties, Temperature influence.

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