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The Impact of Substituting Wheat Flour with Several Gluten-Free Flours (Coconut, Peas, Almond and Quinoa Flours) on Rheological Dough

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EATING gluten-free is recognized to be good for a variety of different health issues and has been popular recently. This study's goal was to investigate the impact of wheat flour partial replacement (40%) with 5 gluten-free flours (60%) that considerably high nutritive value. The percentage of these flours is added as follows: first Sample: Wheat flour 100 % as control Sample , samples:(2th, 3th, 4th and 5th): 40% of wheat flour (WF) + 60% of (peas flour(PF), coconut flour (CF), almond flour (AF) and quinoa flour (QF). The chemical composition, mineral content and amino acids of all flour were determined. The rheological characteristics using farinograph, extensograph instruments, and sensory evaluation for all flours were also investigated. The results showed that the highest calcium, magnesium, and phosphorus amounts were found in almond flour (268.00 ± 8.04 , 280.00 ± 7.40 and 487.00 ± 7.02 , respectively). The highest amount of iron was found in quinoa flour (5.33 ± 1.10). There were high values of all amino acids found in almond flour, followed by quinoa flour. Farino and extensograph evaluation revealed that sample WF40 % + AF 60% has the greatest levels of water absorption, dough development, stability, and extensibility (63.5%, 5.5min, 15.5 min and 70 mm respectively). On other hand, evaluation of the organoleptic properties of toast bread revealed that bread produced from coconut and almond flour had acceptable values of taste (9.72 ± 1.25 and 9.56 ± 0.88) compared with wheat control bread. This study's findings give important insights into GF flours and may aid in the creation of innovative gluten-free items such as bread, biscuits, and other baked products.

Keywords: Almond, Quinoa, Farinograph, Extensograph, Sensory evaluation.