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MILLING DEGREE OF WHEAT FLOUR AND WHOLE MILK AND THEIR EFFECTS ON NUTRITIONAL AND TECHNOLOGICAL PARAMETERS OF CAKES

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Introduction: The high consumption and demand for bakery products, such as cake, leads to the search for improvements in the nutritional profile. The refined flour replacement by whole flour and use of milk in the formulations as one of the alternatives. The cake production, with pleasant texture and specific volume, requires aeration during the dough preparation, through the gas incorporation. Lipids are important for mixture stability until the initial baking phase, acting as low molecular weight surfactants, reducing the surface tension and stabilizing the air-liquid interface. **Objective**: In this study, the objective was to verify the wheat flour degree of milling and the use of milk effects on nutritional and technological parameters in cakes. **Methodology**: Whole and white wheat flour, whole milk, and other ingredients were purchased from local market in Rio Grande (RS). The cakes were prepared according to the AACC official method replacing water for milk (40 g) and white flour for whole flour (100 g). The technological parameters were evaluated for hardness, determined in a texturometer, cooking loss (CL), and specific volume (SV), determined by gravimetric methods. Lipid was determined by Folch and the caloric value (CV) was estimated by the proteins, carbohydrates, and lipids caloric coefficients. The experiments were performed in triplicate and subjected to analysis of variance and Tukey's test ($p<0.05$). **Results**: The flour milling degree did not influence the lipid and CV of the formulations ($p>0.05$), but the addition of milk increases 17.2-18.1% and 1.5-1.7%, respectively, by comparison to the control. The flour milling degree did not influence the lipid content and CV ($p>0.05$). However, the addition of milk caused increases respectively of 17.2-18.1% and 1.5-1.7%, respectively, by comparison to the control. These increases are due to the milk fat content (3%). The SV and CL were influenced by flour milling degree, since the cakes produced with whole flour concerning the control showed decreases of 17.2% and 9.5%, respectively. The SV and CL were influenced by flour milling degree, since the cakes produced with whole flour by comparison to the control showed decreases of 17.2% and 9.5%, respectively. These are a consequence of the higher protein, lipids and fibers levels in whole flour that change the stability of the mixture air-liquid interface, increase water losses, hinder dough growth. The cakes with added milk had greater hardness (18.5 and 19.0 N) by comparison to the added water cakes (13.7 and 16.1 N) that may be related to the formation of starch-protein and lipid-protein complex promoted by the milk protein. In technological terms, the cake prepared with white flour and water (control) presented more attractive values, with lower values ??of CL (10.5%) and SV (20.8%), compared to the formulation with whole flour and milk. Furthermore, the hardness was 14.4% lower. **Conclusion**: Concerning nutritional points, cake with whole flour and water is more indicated because it allowed improved nutritional potential and technological parameters closer to the standard formulation. In addition, it is a better fiber source, inherent to the bran and germ of the whole wheat flour.

Palavras-chave: Bakery product, Nutritional support, Lipids, Technological quality.

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