

TÍTULO: THE WHEAT FLOUR MARKETED IN THE NORTHWEST REGION OF RIO GRANDE DO SUL, BRAZIL: DEOXYNIVALENOL, MICROBIOLOGICAL CONTAMINATION AND PHYSICOCHEMICAL PROPERTIES

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Resumo:

Wheat flour, which is the main ingredient used in the production of bakery products, is the result of the process of grinding raw material, which as a consequence, allied to the process of storage, may cause changes in the nutritional and technological flour quality. The flour quality is directly influenced by the grain characteristics as the chemical composition, the structural properties and the microbiota. This study aimed at evaluating the occurrence of deoxynivalenol (DON) in wheat flour produced in Rio Grande do Sul (Brazil) and marketed in the northwestern region of the state. The physicochemical and microbiological quality also evaluated. DON contamination was evaluated in a total of 25 wheat flours samples. The samples were collected during the September 2014 until January 2015 from the local market and analyzed by thin layer chromatography. The samples were also subjected to physical and chemical determinations of moisture, ash, protein and water activity, microbiological tests of molds and yeasts, total and thermotolerant coliforms, *E. coli*, *Staphylococcus* sp. and coagulase positive. Forty eight percent of wheat flours samples were contaminated with DON which concentrations ranged from 2700 to 7200 µg/Kg, that are higher than the limit considered acceptable by Brazilian legislation (1700 µg/Kg). The physicochemical determinations indicated that all the samples were in accordance with the parameters recommended by legislation. The maximum value of water activity found was 0.74 in all wheat flour samples analyzed. With regard to the microbiological determinations, the results pointed out that samples presented values of total and thermotolerant coliforms which is lower than the maximum limit established by the resolution RDC no. 12/2001. The *Staphylococcus* sp showed a score between 1.51 log CFU/g and 3.45 log CFU/g. *E. coli* and *staphylococcus* coagulase-positive were not detected in any of the samples. The molds and yeasts were observed in all the samples analyzed, however the Brazilian legislation does not establish limits for these microorganisms in flour and bakery products. Our results suggest that it would be relevant doing this evaluation since the microorganisms are related to the food quality in terms of sanitary hygiene. It is important to emphasize that the occurrence of DON reinforce this necessity.

Palavras-chaves: wheat, deoxynivalenol, thin-layer-chromatography

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