



EFFECT OF BREWERS SPENT GRAIN ADDITION AND EXTRUSION PARAMETERS ON SOME PROPERTIES OF EXTRUDED YAM STARCH-BASED PASTA

ABSTRACT

The effect of brewers spent grain (BSG) addition (5–15% level), barrel temperature (100–110C) and screw speed (100–140 rpm) on proximate composition and functional properties of extruded yam starch-based pasta were studied. A laboratory scale single-screw extruder was used to obtain the extrudates. Data obtained were subjected to statistical analysis using RSM based on Box–Behnken design to optimize process variables. Seventeen combinations including five replicates of the central point were performed in random order as configured for three factors. The responses are significantly affected by the process parameters with the effect of temperature more pronounced. Based on the desirability concept, the optimum conditions for processing of extrudates were found to be a barrel temperature of 110C, screw speed of 121.47 rpm and BSG level of 9.58%.

PRACTICAL APPLICATION

In this work, we have demonstrated practically the use of brewers spent grain (BSG) regarded as a problematic waste product in the brewing industry in the development of a yam starch-based pasta product. The BSG at different levels was used as a source of dietary fiber in combination with variation of extrusion parameters. The extrusion process was observed to be highly effective with the aforementioned processing conditions applicable for the production of pasta products with acceptable proximate and functional properties. This is a practical way of utilizing this major problematic waste in many brewing industry and can be an addition source of revenue for the food industry.

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