Title of Article: Functional and Nutritional Properties of Spent Grain Enhanced Cookies.

Author(s): Ajanaku K.O., Dawodu F.A., Ajanaku C.O. and Nwinyi O.C.,

Outlet: *American Journal of Food Technology*. (2011) 6(9): 763-771.

Abstract: The generation of large tonnages of spent grains as byproduct has become major disposal problem in brewing industry. This necessitate sourcing utilization alternatives to complement present use as animal feeds. The incorporation of this brewery spent grain, BSG, into cookie formulations to 15% maximum levels and its effects on the nutritional and functional properties of cookies was investigated. About 6.14% dried and 610 μm milled BSG were added to cookie formulation mix at 0, 3, 6, 9, 12 and 15% levels. Other recipes added include: wheat flour, salt, sodium carbonate, water, non-fatty milk and additives. The trace metal content of the blended products were also compared with local and imported cookies. The results obtained indicated free fatty acid, moisture content, extracted fat and sensory evaluation of the final cookies were limited to 6% optimum inclusion while the spread ratio analysis suggested 3% BSG usage. The undesirable flavor of BSG as additives influenced the taste of the cookies to a great extent and did not change the nutritional status of the samples from 6% BSG inclusion. The trace metals statistical analysis of the BSG supplemented cookies compared well with both locally baked and imported cookies ($p \leq 0.05$). However, addition of brewery spent grains significantly increased the nutritional properties of the cookies up to 6% level of BSG addition.