PRODUCTION AND EVALUATION OF SOME PRODUCTS PROCESSED FROM SOYBEANS

By

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B.Sc. (Food Science and Technology),

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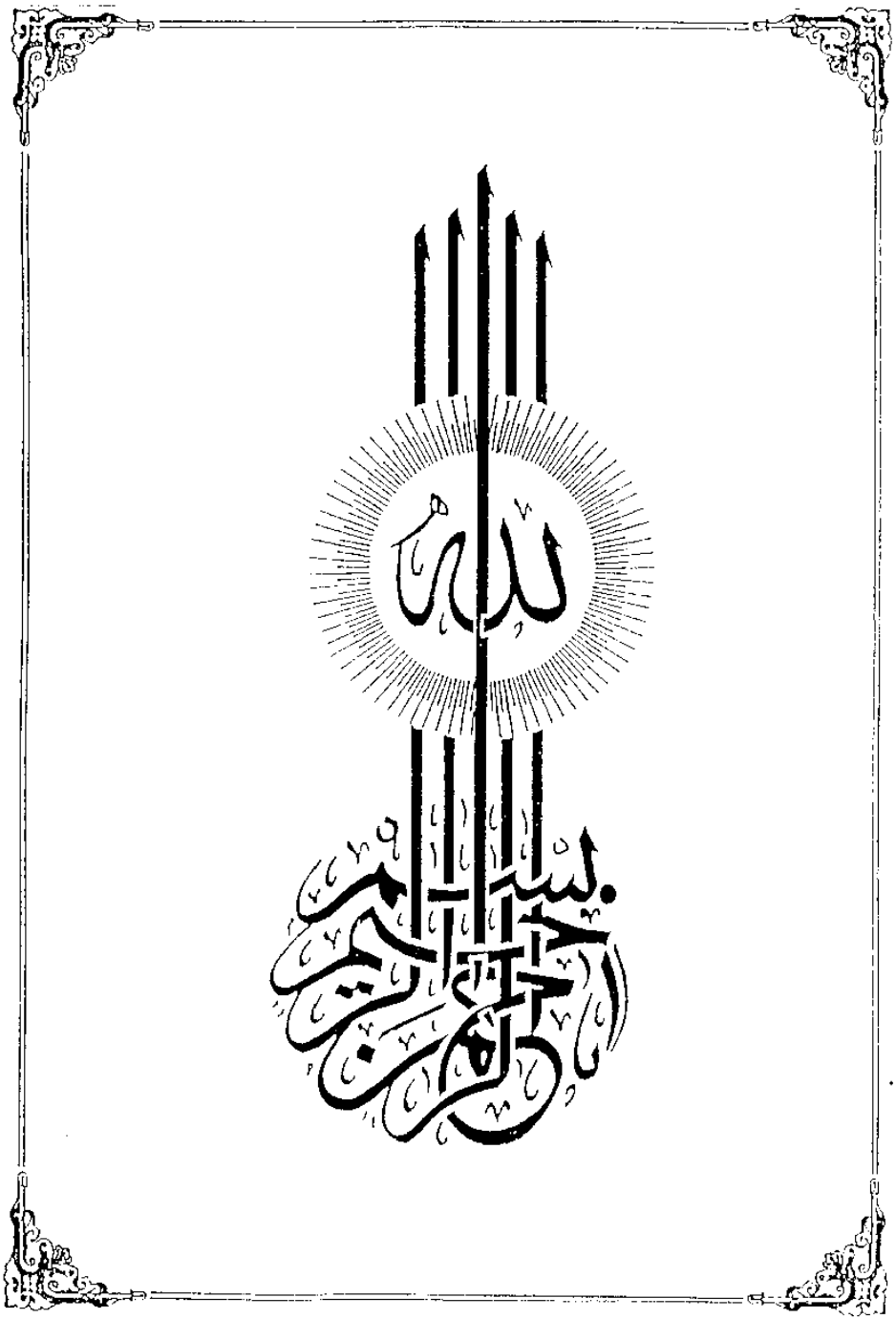

APPROVAL SHEET

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ABSTRACT

Ghada Mahmoud Khiralla Saad. Production and evaluation of some products processed from soybeans. Unpublished Master of Science, University of Ain Shams, Faculty of Agriculture, Department of Food Science, 1999.

Autoclaving process at 121°C for 20 min of dehulled-soaked soybean seeds reduced Trypsin inhibitor activity, phytic acid and oligosaccharides content by 91.5, 6.94 and 74.1% respectively.

0.3 % of calcium chloride and 0.7 % of calcium sulfate as well as 3 % lemon juice (as a natural precipitating agent) were selected among different coagulating agents for tofu production as they recorded the highest yield and panel scores. Also, tofu prepared from soymilk of extraction ratio of 1: 5 (beans to water) was more accepted than those produced from extraction ratio of 1: 9. Higher levels of Ca salts were required to coagulate soymilk prepared from autoclaved soybeans (treated tofu). Acid precipitated tofu was preferred by panelists over that precipitated with Ca Cl_2 and $CaSO_4$. Microbiological analysis, pH and titratable acidity measurements showed that immersed of tofu samples in sorbate solution (0.15% potassium sorbate + 0.5 % white vinegar) was extended the shelf life stability of tofu than immersed in pre-boiled water during storage at 5±1°C. Lemon juice precipitated untreated tofu (prepared from unautoclaved soybeans) had a shelf life stability extended to about 45 days, when packed in sorbate solution.

The effect of sugar type; glucose, fructose and sucrose at 1, 2 and 3 % levels on acid production of soyoghurt with *Lactobacillus delbruekii* ssp. *bulgaricus* (DSM 20080) +

Streptococus thermophilus (ATCC 1569) (YC), *Bifidobacterium bifidum* (ATCC 15696) + *Lactobacillus acidophilus* (ATCC 20552) (BC) and (YBC) which consisted of (YC) + (BC) at different inoculation rates were studied. More acid was produced and at a high rate in 2 % glucose-supplemented soymilk. However, 4 % of YC as well as YBC-fermented soyoghurt exhibited significantly greater titratable acidity values than BC-fermented soy milk ($P < 0.05$). Soyoghurt with fortifiers, calcium gluconate + potassium citrate (CGS), Swiss whey (SWS) and sodium casinate (SCS) were compared for pH, acidity viscosity and sensory properties. SWS and SCS recorded the highest panel scores. The amount of acid produced in SWS and SCS yoghurt were 0.322 and 0.288 when fermented with 4 % YC and 0.322 and 0.261 with 4% YBC. The viscosity measurements of the product showed that SWS fermented with YBC were more viscous (i.e. 37.41 Dynes/$cm^2.s^n$) than unfortified soyoghurts (i.e. 10.51 Dynes/$cm^2.s^n$). Calcium fortified soyoghurt showed more synersis than unfortified soyoghurts. However, SWS showed relatively low values of synersis. The mean flavor scores for vanillin and strawberry-flavored soymilk yoghurt were higher significantly than unflavored soyoghurt. Fermentation of soymilk with YC in the presence of *Bifidobacterium spp.* was more affective for reducing oligosaccharide contents (40–44 %) than YC alone (15--17). Microbial spoilage of different soyoghurt samples was followed during storage at 5±1°C.

Key wards :-

Soybean, tofu (soy curd), soyoghurt, chemical composition, antinutraitional factors, trypsin inhibitor, oligosaccharides, phytic acid, microbiological quality, sensory evaluation, Lactic acid bacteria, Bifidobacteria, shelf life, viscosity.

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