

Bio-technological studies raising of nutritive value of some bakery products

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Summary and Conclusion Consumption rate of bread in Egypt is considered among the highest rates compared to other countries. Therefore an improvement of the bread quality and prolongation of its shelf life would be valuable to the consumer in Egypt; in particular those suffering from diabetes. The problem at hand was carried out to study the possibility of using addition of barley bran, wheat bran, wheat germ, soy hull, and tofu as a sweetener for diabetic and utilizing of addition of barley bran, wheat bran, soy hull, Wheat germ, tofu, as a sweetener in bakery products such as bread. Rheological properties, chemical composition, organolyptic evaluation and biological evaluation of produced bread were studied. First-. Chemical composition of used raw materials-. The chemical analysis showed that wheat flour (82% ext.) contained 11.5% moisture, 12.8% protein, 1.2% fat, 1.3% fiber, 0.96% ash, 72.24% carbohydrates and 390.96 K.cal /100 g. Barley bran contained 8.17% moisture, 18.31% protein, 3.72% fat, 19.0% fiber, 7.74% ash, 53.06% carbohydrates and 332.96 K. Cal/100g. Soybean hull contents 8.8% moisture, 8.4% protein, 1.1% fat, 40.8 %fiber, 3.6%ash, 37.30% carbohydrates and 228.70 K.cal /100g. Tofu crude contents 82.09%% moisture, (on dry basis) 50.1% protein, 16.1% fat, 15.4% fiber, 9.2% ash, 9.2% carbohydrates and 386.2 K.Cal /100g. wheat germ contents 9.75% moisture, 20.6% protein, 11.8% fat, 1.9 % fiber, 3.9 % ash, 52.05 % carbohydrates and 396.80 Kcal /100g. Wheat bran contents 8.90% moisture, 17.9% protein, 4.9% fat, 11.2% fiber, 4.9% ash, 52.2% carbohydrates and 328.5 K.cal /100g. Second-. Rheologic, a1 properties 1-Farinograph test: The results declared an increase in water absorption in all blends, this increasing was probably as a result of the higher protein content of the blends causing greater hydration capacity. Arrival time and dough development time increased except for chemical blend no changed. Dough stability decreased in natural blend at levels (90% wheat flour +10% soy hull), (90% wheat flour +10% barley bran) and (95% wheat flour +5% soy hull). This increase may be due to the high fiber content, which destroyed the gluten matrix, while chemical blend increased. Dough weakening increased in natural blend (95% wheat flour + 5% wheat germ) and (97.5% wheat flour + 2.5% tufo). 2-Extensograph test: The data mentioned that dough extensibility decreased in all blends. Resistance to extension decreased except for chemical blend increased. That cherrilca1 composition of produced Balady bread. Their sults indicated that the high protein, fiber, ash and moisture content of the blends coursing greater by duration while carbohydrates and values of energy blend was low with control. The results indicated that moisture which ranged from 34.0 to 37.0%, protein ranged from 13.2 to 17.23%, fat ranged from 1.28 to 2.9%, ash ranged from 1.1 to 2.96%, fiber ranged from 1.2 to 3.9%, carbohydrates ranged from 74.74 to 83.22% and values of energy ranged from 317.20 to 392.55.gm. k. cal.* Organolyptic evaluation of produced balady :Diameter, height and spread ratio of produced bread there was no significant different between control and all blends. Natural blend (97.5% wheat flour + 2.5 tufo) and (95%wheat flour + 5% tofu) were the best in taste, while natural blend (90% wheat flour + 10% barley bran), (80% wheat flour + 20% barley bran) and (97.5% wheat flour + 2.5 tufo) was the best in odor and color. The improving in taste and odor may be attributed to the volatile oil finding in raw materials. Fourth. Biological evaluation Bioavailability of iron was estimated by means of numerous factors such as body weight gain for rats experimental, organs weight, glucose content in organs and glucose content in serum, besides blood analysis. Statistical analysis showed that (80% wheat

flour + 20% barley bran) was the best after 4 weeks compared with other blends. Statistical analysis appeared that there was no significance in mean values among normal or acemic control and all groups of rats after 4 weeks concerning (G.P.T) which ranged from 12 to 33 IU (G.O.T) ranged from 27 to 40 IU, cholesterol in serum decreased from 256 to 122 mg/dl, . While in liver decreased from 0.755 to 0.480mg/dl. in addition 20% barley bran same normal control. Total lipids in serum decreased from 347 to 284 mg/dl, (in 20% barley bran),. While in liver decreased from 7.20 to 4.90 mg/dl,(in 20% barley bran), triglycerides in serum decreased from 125 to 93 mg/dl,(in 20% barley bran) .Blood analysis: The data in showed that blood glucose of rats in normal control for non-diabetic was (97 ±9.9) mg/dl. Diabetic control was increase (188 ±17.3) compared with normal control .Group feeding bread (addition 20% barley bran before baking) and group feeding bread (addition 10% barley bran after baking) for,diabetic it show significant decrease (99 ±7.2 and 101 ±8.06 mg/dl) respectively compared with diabetic control. The data in showed that blood triglyceride of rats in normal control for non-diabetic was (92 ±16.3 mg/dl) in serum. Diabetic control it show non-significant increase (125 ±19.7 mg/dl) group feeding 20% barley bran and 10% barley bran for diabetic it show significant decrease (93 ±13.2 and 96 ±17.2 mg/dl) respectively compared with diabetic control. The data in showed that blood cholesterol of rats in normal control for non-diabetic was 155 ±28.5 mg/dl (in serum)., while was (0.480 ±0.08 mg/dl) in liver .Diabetic control was (256 ±36.9 mg/dl) in serum , while was (0.755 ± 0.09 mg/dl) in liver. Group feeding bread 20% barley bran and bread 10% barley bran for diabetic it show significant decrease(122 ±31.5 and 130 ±34.8) respectively in serum compared with diabetic control while was (0.480 ±0.03 and 0.520 ±0.07 mg/dl) respectively in liver compared with diabetic control. The data showed that blood lipids of rats in normal control for non-diabetic was 263 ±81.5 mg/dl in serum ,while was 4.00 ±0.21 mg/dl in liver. Diabetic control was 347 ±99.7 mg/dl in serum while was (7.20 ±0.36 mg/dl in liver. Group feeding bread 20% barley bran and 10% bread soy hull for diabetic it show significant decrease (284 ±75.6 and 290 ±74.5 mg/dl) respectively in serum ,while was(4.90 ±0.38 and 5.80 ±0.61 mg/dl) respectively in liver compared with diabetic control. The minerals intake of population who subsist on wheat flour and other cereals are often low thus, can be applied to extrapolating the finding of the study to human subject, especially in those areas where diets are marginal in nutrients and the major portion of daily caloric intake come from food of plant origin.