studies on minimizing bread waste according to some nutritional habits

Shereen lotfi Abou El-Ghouth

In Egypt about 200 million-balady bread are produced daily that means about 7 million to of wheat flour according to rapid increase in population. In addition, it is noticed that about 20% of wheat lost during and after production because of rapid staling after baking and that is not acceptable for consumers.Field research has been done to know the amount of bread waste in Cairo and Giza, that showed 100% from the studied families get their balady bread from the market, 6.7% use the bread waste for feeding domestic birds, and animals 31.1% throw it away, and the eatable bread was 62.6% . Due to this problem, it was important to think of the reasons of this big amount of balady bread waste, by improving balady bread quality by adding different materials to wheat flour like, corn sorghum barley.Chemical composition of the used raw materials:-Chemical composition of wheat flour 82% extraction, corn, sorghum, barley and naked barley flours have been done. The parameters determined were moisture, ash, crude protein, crude fiber, ether extract, and total carbohydrates on dry basis. The date demonstrated that the highest content of crude protein, ash 12.80%, 2.84%, respectively in naked barley flour, but the lowest ration was in corn flour 9.40%, 1.30% respectively and ether extract was high in sorghum flour 3.35% compare with wheat flour 1.54%, and fiber in barley flour 4.80%. Falling number in raw material was determined and result showed that wheat flour falling number was the highest 318 (sec) that meansthat enzymes are very active in wheat flour. Beta glucan was determined in naked barley and barley; results showed that (3-glucan was higher in naked barley than barley 4.18% - 8.98% respectively.Amino AcidsThe results of amino acids for corn, sorghum, barley and naked barley flour showed that, corn flour and sorghum flour were slightly lower than wheat flour in total amino acids 68.2, 58.2, 66 (g/ 100g) respectively while sorghum flour was followed the wheat flour in amino acids 65.4 (g/100g) .Also naked barley flour was higher than barley flour and the amino acid ratio was 67.8, 65.4 respectively.Visco Amylogram (parameters).Addition 10%,20% and30% corn, barley, naked barley flours to wheat flour increased the degree of transformation, Temp. at maximum viscosity, max. Viscosity at 50°c and set back. While maximum viscosity and viscosity at 95°c decreased with increasing the levels up to 20% corn, barley, naked barley flours. while addition sorghum flour to wheat flour increased degree of transformation. Temp at maximum viscosity, viscosity at 95°c and viscosity at 50°c decreased the maximum viscosity.Sensory evaluation of balady breadThe sensory characteristics in general appearance, color of crust, color of texture, color of crumb, flavor and taste of balady bread supplemented by different levels of corn, sorghum, barley and naked barley flours 10, 20, 30% were evaluated by ten panelists and data were statically analyzed .7 0G.1 LL?After 6hr.EilAfter 12hr.0000****ofVO0O000.Ecr)90O° v)wm C•OPewC•1 CC) -0M 0 £9 =mhh 1,0•66.10h,xiozoometozweee Nwv4,644.0444,00,—.,,ms..iii.000. .4,.iimm .ke.e.e. q.VilliVIINNNWILVIANNX NMWI MO • MI MO950laquo3ZSsa88L8Woo...WM 3L 0(0f k 0t DC 01?After24hr.Results and discussion1 0.111.1 0 065SSMWSC,NINONaOResults and discussion0 After24hr.0 After 12hr.U) 1:2IL00 After 6hr.-oRSa)_o60£0litt:WA99,200x,929297297270,24ZSZWAS’e.’.*,917mcoccimccomgccongcsccomolllocommgcommovniroxlm,....pcmcgccan•••:•:0:4•:•””yev•ve.”•:..:•:•:•:•:0•:-:1,14, QML090’;15:;66ac60iccmcgrcom? occcoximmincumN..\dff, off/elft:SZSZSg4•114, VI?”E;:;’r • • • • iciaMrcliMIXIMODOCKOMINCIIMMI,NNX”..„NN\90VC1Adding 20% from corn, sorghum flours didn’t

affect the sensory properties for the produced bread and when increasing to 30% the sensory properties decreased compared with control.Adding barley and naked barley 20% gave good taste although the decrease in loaves volume and the color of the bread was dark. But, taste, flavor, and general appearance were good and 0- glucan was high.When using gelatinization of corn, sorghum, barley and naked barley flour 5, 10, 15, 20, 30% and studying the sensory properties of produced balady, bread best level was 10% of gelatinization corn flour, and best ratio from gelatinized sorghum flour was 15% and best level of gelatinized barley and naked barley was 5% and 10% respectively.It could be noticed that adding 1.5% gluten and 0.5% Vitamin (E) to 20% of corn, sorghum, barely and naked barley flours, gelatinized flours gave and improvement in sensory evaluation for the produced balady bread.Adding corn sorghum and barley flours gelatinized ratio 10% gave the best quality, but the gelatinization naked barley flour with a ratio 20% gave the best bread quality.Chemical composition of balady bread:-The results of chemicals composition of balady bread wheat flour 82% and corn, sorghum, barley and naked barley flours and flours gelatinized. It's illustrated that ether extract, ash, and crude fiber, were higher in balady bread produced from corn flour or corn flour gelatinized, while crude protein wasreduce.Also, the results showed that protein, ether extract, ash and crude fiber were increasing with the increase in levels of sorghum flour or sorghum flour gelatinized, while the results of adding barley flour and flour gelatinized showed decrease in protein, ether extract, ash and crude fiber than the control.The results showed protein, ether extract, were increased with increasing the levels of naked barley flour and flour gelatinized on barley flours . While showed a decrease in ash and crude fiber .While the results showed adding 1.5% gluten and 0.5% vit.E on 20% raw and gelatinized flours lead to clear increase in protein and the increase ranged between in balady bread produced .Staling for balady bread:The results illustrated in general addition 10%,20% and 30% corn , sorghum , barley and naked barley flour to wheat flour lead to a decrease in balady bread staling rate through the 24 hours of baking.While, the rate of decrease was reduced than control up to 20% addition of all raw materials used through the 12 hours of baking.Also , addition 20% of corn , sorghum , barley and naked barley flours , flours gelatinized +1.5% gluten + 0.5% vitamin E to wheat flour lead to decrease in balady bread swelling power and increase in rate of decrease through the 24 hrs. Of stored bread.Conclusionfrom these obtained results formed that the addition corn, sorghum , barley and naked barley flours + 1.5% gluten + 0.5% Vitamin (E) lead to improve the quality of balady bread produced.The best level of corn and sorghum flours were 20% while the best level of barley and naked barley flours were 10%, gave good balady bread.