Addition of gluten pentosans, Ascorboc acid and milk casin to wheat flour to produce a high quality bakery products

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This research was carried out to study the effect of addition levels of gluten, pentosans, ascorbic acid, and milk casein to wheat flour , and its effect on manufacturing procedure characteristics and shelf life of resultant two types of the main commen bread, mainly pan and balady (flat). The obtainedresults would be summerized as following : 1.Properties of starting baking :1.1. whole wheat flour contained the highest values of : protein, fiber, ash, fat, and total pentosans than other constituents (82 %, and 72 % flour ext.). The corressponding figures were : 13.59, 1.51, 1.58, 0.53, and 3.21 % respectively, while 72 % ext. flour contained the lowest content of fiber, ash, fat, and total pentosans being 0.61, 0.54, 0.39, and 2.28 % respectively.Likewise, whole wheat flour contained also the highest values of minerals content namely, Mg, Na, Zn, Mn, Fe, K, Cu) being 327.194, 143.5, 7.653, 32.336, 8.61, 323.367, and 7.318 mg / 100g respectively. Wheat flour 72 % ext. contained the highest values of wet and dry gluten than the others (whole flour, and 82 5 ext. flour) being 26.61, and 8.99 % respectively.2. Role of wheat flour gluten content on sedimentation test , and alkaline water retention capacity :The figures of sedimentation test were 42.4, 56.1, and 59.7 cm.for whole flour, 82 %, and 72 % flour ext. While, those ofalkaline water retention capacity values were 74.81, 80.98, and 87.93%for whole flour, 82%, and 72% flour ext. respectively.3. Effect of adding gluten, pentosans, ascorbic acid, and milk casein to (72 %, and 82 `)/0 ext. wheat flours) on the rheological properties of dough :3.1. Effect of adding gluten :The proportional addition of gluten to 72%, and 82% ext. flours at the levels of nil, 1, 2, and 3% revealed an increse in the water absorption from 56.9 to 59.3 %. Also, dough stability increased from 3 to 11 min. from extinsograph data, it could be observed that the extensibility, resistance to extension and energy were increased as the ratio of added wheat glutenincreased.3.2. Effect of adding pentosans :Similarly the proportional addition of pentosans to flours at the levels of nil, 0.5, 1.0, and 1.5 % led to gradual ingrease in the water absorption of dough 56.9 to 60.3 % . Dough stability increased from 3.0 to 4.5 min. from resulted extinsograph figures, it could observed the resistance to extension, and the proportional number were decreased, while the extensibility and energy were increased.3.3. Effect of adding ascorbic acid :Similar trends was observed by adding ascorbic acid at the levels of nil, 0.002, 0.003, and 0.004°A The water absorption of dough increased gradually from 56.9 to 59.8%. While, dough stability increased from 3.0 6.5 min. Concerning to obtainedextinsograph results, resistance to extension of dough increased , while the extensibility decreased.3.4. Effect of adding milk casein :Likewise, milk casein added at levels of nil, 5, 10, and 15% caused gradual increament in the water absorption of dough 56..9% to 60.3%. Whilst, dough stability recrded a highly increased from 3.0 to 12.0 min. Extinsograph results showed an increament in resistance to extension, while, extensibility of doughs decreased .4.5. Effect of adding gluten, pentosans, and milk casein on amylograph dough viscosity:The same additives level were also applied in the two types of flours (72 %, and 82 % ext.).4.5.1. Effect of adding gluten :Results illustrated the maximum viscosity increased from 500 B.0 to 550 B.U, and from 460 B.0 to 525 B.U.4.5.2.Effect of adding pentosans

:Maximum viscosity was gradually decreased from 500 B.0 to 435 B.U, and from 460 B.0 to 420 B.U.4.5.3. Effect of adding milk casein :Maximum viscosity was decreased from 500 B.0 to 350 B.0 and from 460 B.0 to 280 B.U.4.6. Effect of adding gluten, pentosans, and milk casein on dough viscosity :-The previous level of addition were also tested. 4.6.1. Effect of adding gluten:from the obtained results, dough viscosity increased from 121 (centi/poise) to 159 (cm/poise), and from 108 (centi/poise) to 154 (centi/poise).4.6.2. Effect of adding pentosans :Viscosity increased from 121 (centi/poise) to 151 (centi/poise), and from 108 (centi/poise) to 142 (centi/poise)4.6.3. Effect of adding milk casein :Viscosity increased from 121 (centi/poise) to 176 (centi/poise), and from 108 (centi/poise) to 162 (centi/poise) .5. Effect of adding gluten, pentosans, ascorbic acid, and milk casein on sensory characteristics of pan and balady bread:5.1. Effect of adding gluten, pentosans, ascorbic acid, and milk casein on sensory characteristics of pan bread :The same level of flour additives were done for 72 % ext. flour.5.1.1. Effect of adding gluten :The obtained results indicated that the blend which contained 2% gluten gave the highest value in overall acceptability.5.1.2. Effect of adding pentosans:It could be oconcluded that, blend which contained 1.5 % pentosans gave pan bread characterised with a high sensory values.5.1.3.Effect of adding ascorbic acid:Concernin to results, blend which contained 0.003 % ascorbic acid gave the highest scores in overall acceptability.5.1.4. Effect of adding milk casein :from the obtained results, using of 5 % milk casein produce an exellent pan bread.5.2. Effect of adding gluten, pentosans, ascorbic acid, and milk casein on sensory characteristics of balady bread :5.2.1. Effect of adding gluten:Samples which contain 2 % gluten considered the best blend compared to all other blends.5.2.2.Effect of adding pentosans:Results revealed that balady with 1.5% pentosans recommended the best addition.5.2.3. Effect of adding ascorbic acid :from results, blend No. (2) which contain 0.003 % ascorbic acid consider the best blend.5.2.4. Effect of adding milk casein:Addition of milk casein up to 5 % gave a balady breadcharacteristics with a very good quality grade.6. Effect of adding gluten, pentosans, ascorbic acid, and milk casein on the physical properties of pan bread:The same previous levels were used for 72 % ext. flour. 6.1.Effect of adding gluten:The height, weight, volume, and specific volume were increased gradually with increasing the levels of added gluten.6.2. Effect of adding pentosans:Physical properties were gradually increased with increasing of added pentosans.6.3. Effect of adding ascorbic acid :The highest values of physical properties were obtained of (0.003 %) ascorbic acid compare to other two blends.6.4. Effect of adding milk casein:Addition of (5 %) milk casein gave the highest values of physical properties for produced pan bread.7. Effect of adding gluten, pentosans, ascorbic acid, and milk casein to wheat flour on bread staling:7.1. Effect of adding gluten, pentosans, ascorbic acid, and milk casein to wheat flour on pan and balady bread staling7.1.1. Alkaline water retention capacity of adding gluten, pentosan, ascorbic acid, and milk casein on pan bread stalingThe same level of flour additives were added to 72% ext. flour.The results showed that control bread had the lowest value of (AWRC) Meanwhile, pan bread made with different adding ratios of gluten were recorded higher values of (AWRC). Also, pan bread with different levels of added pentosans had the highest value of (AWRC). On the other hand, results showed that (AWRC %) of different prepared of pan bread with adding different levels of ascorbic acid appears the improvements. The values of (AWRC) for pan bread produced of adding different levels of milk caseinhad the highest scores comparing with those prepeared with adding gluten and pentosans.7.1.2. Alkaline water retention capacity of adding gluten, pentosans, ascorbic acid, and milk casein on balady bread staling :The same level of flour additives were added to 82 % ext. flour. (AWRC) of tested balady bread increased with the increasing the levels of addition of gluten, pentosans, ascorbic acid, and milk casein.8.Compressibility of pan bread :The same previous levels of additives were applied for 72% ext. flour.8.1.Compressibility of pan bread baked with different levels of gluten:The highest compressibility of fresh samplescharacteristized with high ratio for pan bread baked with 2% gluten .8.2. Compressibility of pan bread baked with different levels of pentosans:from the obtained results, the highest compressibility value of fresh samples which baked with 1.0 % pentosans.8.3. Compressibility of pan bread baked with different levels of ascorbic acid:The optimum addition of ascorbic acid ratio (0.003 %) showed the lowest loses in its relative compressibility with extending of storage times8.4.Compressibility of pan bread baked with different levels of milk casein:The optimum added milk casein ratio (5 %) showed the lowest losses in its

relative compressibility which extending of storage period.Finally, the foregoing results are evidently leading to include that, all suggested food additives were evidently confirmed to play beneficial roles on the bread properties.whereas the supplementation of wheat flour, whether of 82% or 72% extraction rates with 2% gluten, 1% pentosans, 0.003% ascorbic acid, or 5% milk caseins offered several advantages in the bakery field mainly improving the organoleptic properties, expirty periods, and consequently maximizing the industrial economy by minimizing the market refused rate. Needless to add that some additives possess nutritional consideration, meanly those involving protein via gluten or milk casein.