Improvement of some bakery products

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The present investigation included the study of theeffeat of adding fruits and vegetables by-products suchas apple, pear, tomato and carrot produced from processingindustry to bakery products ••The .pomaces of these foodscould be considered a new source of dietary fiber thatavoids the unfavorable high phytate content found in wheatbran. Also, ~he use of these pomaces might significantlyreduce waste pollution from commercial processing industry •Another purpose was to study the effect of adding some stalingimprovers such as pectin, GMS and two commercial improvers(Advitacel 1614 & YX2/T which are; the mixture of some surfactant)to bakery products •To achieve these goals, first, dried by-products of apple,pear, tomato and carrot were chemicaly analysed and dietaryfiber contents as a total and as a components of dietaryfiber were determined. The effect of these by-products on therheological properties of doughs made from American wheatflour as a hard and Frensh flour as a soft were investigated •Also the effect of staling improvers on rheological propertiesof both dough were investigated •Secondly, effect of ~sing different levels of by-productson producing low - calorie shamy bread and cake -batter ••The chemical, physical, sensory and caloric values of theresultant bakery products were determined.-169 .Thirdly. effect of using different levels of stalingimprovers on producing shamy bread and cake. The chemical,physical properties and acceptability of the resultant shamybread and cake were determined •The obtained results could be summarized as follows :part. I • Chemical analysis and properties of flours andadditives used in producing shamy bread and cake.(1) The chemical composition of wheat flour indicatedthat the crude protein. ether extract. reducingsugars. hemicellulose. cellulose of Americanwheat flour were higher than that of Frensh wheatflour. While the moisture, crude fiber. ash,starch, water soluble pectin. dietary fiber andtotal carbohydrats of American flour were leBsthan that of Frensh one •(2) Chemical analysis of dried powder by-productsrevealed that all dried by-products used contained ahigher content of crude fiber and dietary fiber. Furthermore.they possesed higher content of cellulose.(3) Pectin which is used in improving shamy breadand cake. showed high water soluble pectincontent which was the major constituents ofdietary fiber in pectin •(4) The division of water-insoluble hemicelluloseand cellulose fractions into its minor constituentsshowed high pentosescontent in pear, apple,tomato and carrot powders by-products. but lowcontent of hexoses and uronic acids respectively.-- - - - - - - - - ----------170(5) Dough properties on Parinograph apparatus revealedthat the American wheat flour is more strongerthan the Frensh one. The addition of by-products(apple, pear, tomato and carrot) increased waterabsorption, mixing time, DROP off, weaking ofdough, while decreased stability.(6) The addition of pectin gradually increased waterabsorption in beth doughs” whi1e_ the addition ofGillS,AdTi tace1 1614 and ~/T indicated no significantdifferences in water absorptionbetween the increased levels. The doughstability did not inf1eunce by the additionof GillSto American flour, but it decreasedat 5 ~& level in case of adding AdTitacel-1614 and ~/T •(7) Extensograph properties showed that the additionof fibers to both dOUgh decreased extensib1it1(E), while increased resistance to extension(R)and proportion number(R/E) with increasing theadded levels •(8) Extensograph properties showed that the additionof pectin and GMS increased (E) and (R) to at2 ”/••pectin , 0.7 ”/.GMS in both dough •part.n. Effect of adding additives on chemical, physical,and sensory properties of the resultant sham;, bread.(9) Moisture, ash, crude fibers generly increased withincreasing the addition levels of dried powder ofby-products(apple, pear, tomato and carrot) in loaves-171of shamy bread. While crude protein, etherextract, total

carbohydrates and energy caloriesdecreased with increasing the added levels.(~O) Effects of increased conce~tration of pectin andv.x2/T~n chemical'composition of shamy breadappeared that there were no significant differencesin shamy bread analysis except sugars which increa-.sed with increasing the levels.(11) Weight increased, while volume and specific volumegenerly decreased by increasing percentage levelof dried powder by-products and pectin. Whereasthe addition of GMS and VX2/T increased volume andspecific volume till its concentration rea shed 0.5 OFand J "/0 VX2/T •(12) In general, adding additives in shamy breadresulted in a decrease in the scores of overall acceptability of the resultant shamy bread.The decrement in scores were insignificant whendried by-products were used in a ratios of 7 % and10 / exept in case of bread baked with dried tomatowaste~ the insignificant ratios were at 5. 7. 10·/.When pectin added, the decrement in scores wereinsignificant at ratio J./ •• Whereas instgnificantwhen the ratio reached 0.7·/. ; 5·/. incase of _ adding GIIS and ~/T,respectivelY •- _.-' .~ ----- -------- ---------~172(13) Adding fibers till 5·/. enb8.Dced increment inswelling power of the result8.Dt shamy bread.On the other hand, swelling power decreasedduring storage • While soluble starch decreasedwith increasing dried powder by-products levels,but these decre~ent was lower in bread containingdried powder by-products compairing to control •(14) SWelling power of shamy bread baked with pectinincreased till the ratio reached 2·/. , while inthe bread baked with GMS, swelling power increasedtill 0.5·/. , whereas increased till 2·/. in thecase of bread containing VI2/T •Part. III. Effect of adding add! tives on chemical, physicaland sensory properties of cake •(15) Cake had higher contents of moisture, crude fiberand dietary fiber with increasing the ratios offibers, while crude protein, ether extract, starchand energy calories were decreased with increasingthe ratios of dried powder by-products •(16) Effects of increased concentration of fibers;pectin on baking characteristics of cake - batterappeared that volume and specific volume decreasedgradually, while weight increased •(17) Other physical chracteristic of cake as symmetry,uniformity and shrinkage also influenced by increasingthe dried powder by-products levels andthe levels of pectin, symmetry decreased, wnileshrinkage increased with increasing the ratios.(18) Volume and specific volume of cake baked withGMS till 0.5'/. increased, also cakes bakedwith Advitacel 1614 till 2'/. increased involume and specific volume. No significantdifferences in uniformity and symmetry of cakesbaked with GMS and Advitacel 1614 •(21)Adding fibers till 5'/. to cake formula enhancedsoftness of resltant cake. While the softnessof cake baked with pectin, GMS , Advitacel 1614till the ratios reached 2'/. pectin, 0.5'/. GMSand 3'/. Advitacel 1614 •(19' Adding dried by-products in cake resul1:ed in a ,decrease in the scores of over all acceptabilityof the resultant cake. The decrement in scoreswas insignificant when all types of by-products,~used ina ratios 7 , 10'/. in cake formula •