

# Chemical and technological studies on improving the quality of macaroni produced from local bread wheat flour

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This study was carried out to evaluate the effect of some improving agents on quality of spaghetti made from wheat flour 72% extraction comparison with spaghetti made from semolina. Three improving agents were used, i.e. monoglyceride in gel form, Noopazyme enzyme and ascorbic acid with glucose oxidase enzyme. It was added individually to wheat flour 72% extraction with different levels. Spaghetti cookies quality was determined as (percentage of volume increasing, percentage of increasing in weight and cooking loss), Iodine blue value, firmness tests and sensory evaluation were also carried out. The obtained results could be summarized in the following points:

- 1-Chemical analysis indicated that wheat flour 72% extraction (control 1) contained 13.60%, 11.58%, 0.91%, 0.60%, 0.51% and 72.79% moisture, protein, fat, ash, fiber, and carbohydrate respectively, wheat semolina (control 2) contained 12.32%, 14.65%, 1.1%, 0.69%, 1.17%, and 70.07% of the same components respectively.
- 2-Addition of monoglyceride in gel form to wheat flour of 72% extraction at levels of 0, 6, 12 and 18% resulted in decreased in arrival time, water absorption, dough development time, dough stability and increased in dough weakening compared to control (1 and 2). The results also indicated that addition of Noopazyme enzyme to control (1) at levels of 0, 100, 200 and 300ppm increased the water absorption, arrival time, dough development time, dough stability and decreased dough weakening compared to both of semolina and wheat flour. Moreover, addition of mixture of ascorbic acid with glucose oxidase enzyme to wheat flour of 72% extraction (control 1) increased the water absorption, dough development time, dough stability while decreased dough weakening compared with control (1 and 2).
- 3-Addition of the same levels of monoglyceride in gel form to wheat flour of 72% extraction (control 1) lead to an increase the extensibility while decreased the resistance to extension, proportional number and energy values in compared to control 1 and control 2, but the decreasing rate was found to be increased as levels of monoglyceride gel addition was increased. The results also revealed that addition of Noopazyme enzyme at 100, 200 ppm lead to an increase in the resistance to extension, proportional number, energy values and extensibility, while addition of 300ppm lead to an increase in the extensibility and decrease the resistance to extension, proportional number and energy values. Moreover, the results indicated that addition of mixture of ascorbic acid with glucose oxidase enzyme at levels of 300, 600 and 900ppm resulted in an increase in resistance to extension, proportional number and energy values, while the extensibility was found to be decreased at levels of addition (300, 600 and 900 ppm) compared to control (1) and control (2).
- 4-Concerning amylograph test, the results indicated that addition of noopazyme enzyme to wheat flour (72% extraction) resulted in decrease in the maximum viscosity. On the other hand, addition of monoglyceride in gel form and ascorbic acid with glucose oxidase enzyme caused clear increased in the flour viscosity at all addition levels compared to control (1 and 2) samples although the values were increased as level of addition was increased.
- 5-Results also indicated that addition of monoglyceride gel, Noopazyme enzyme and ascorbic acid with glucose oxidase enzyme to wheat flour 72% extraction lead to improve the cooking quality of the produced spaghetti. However, the percent of improve was increased as level of the added improving agents was increased.
- 6-Concerning the effect of improving agents on Iodine

blue value test the results indicated that addition of monoglyceride gel, Noopazyme enzyme and ascorbic acid with glucose enzyme to wheat flour 72% extraction lead to decrease the loss in blue value of spaghetti and percent of loss was decreased as the level of the added improving was increased.7-The results of firmness test indicated that addition of the three improving agents under study to wheat flour of 72% extraction lead to maintain the moist texture of the resulted spaghetti compared to the control 1) (wheat flour).8-The results of sensory evaluation indicated also that monoglyceride gel, Noopazyme enzyme and ascorbic acid with glucose oxidase enzyme to wheat flour 72% extraction lead to improve the overall acceptability of spaghetti (appearance, color, flavor, tenderness and stickiness). The obtained results revealed that addition of monoglyceride gel , Noopazyme enzyme and ascorbic acid with glucose oxidase enzyme to wheat flour 72% extraction at levels of 12%, 200ppm and 900 ppm respectively, was found to be more effective for improving the quality of spaghetti and nearest the levels to quality levels of spaghetti made from semolina.9-The results of using this improving becomes costs this additives to macaroni from (8-12) egyptain L.E to one kilo macaroni this different lead to improver kind .