Evaluation of Macaroni Production From Some New Varieties of Durum Wheat Cultivated In Sinai Fortefied With Ginger, Moghat and Pumpkin Seed Dry Powder

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Abstract: This study was conducted for the production of pasta from durum wheat semolina of the items of the three (Amar, Sohag, Banyswif) supported powders of some medicinal plants, namely (ginger root dry powder, moghat root dry powder, pumpkin seeds dry powder) recalled for the production of healthy pasta nutritional value and high medicinal has supported the proportions 5, 10 and 15% of the powder full of plants. Producing pasta of durum wheat semolina of Amar, because it is the most tolerant to drought, salinity and the resulting pasta is distinguished in the natural, physical and chemical characteristics. Production of pasta of durum wheat semolina of Amar supported by the following: consolidation of 5%powdered ginger root and pasta chemical Characteristics as it contains high levels of volatile oils and Se and Zn of which are anti-oxidant. Consolidation of 10% powdered roots of moghat pasta chemical characteristics as it contains high concentrations of minerals, especially Fe, Ca, Na, K, Mg, P, Mn and vitamins as well as carbohydrates, protein, and this leads to the high nutritional value of produced healthy pasta from different semolina formula. Consolidation of 15% powder seeds pumpkin leads to discriminated resulting pasta in chemical and natural characteristics as it contains high levels crude fat and unsaturated high quality and source of vitamin A and this leads to the high nutritional value of pasta produced.It contains substances that reduce blood pressure. Results showed that supplementation with 5% powder, ginger root, strengthening by10% of the powdered roots of moghat and consolidation by 15%, powder seeds of pumpkin in different kinds of semolina led to a rise in the chemical components, especially the content of protein, fat, fiber, minerals, and thus improve the quality of product. The study revealed that the best additions are ratios described above and to the possibility of overcoming some health problems such as anemia osteomalacia and hardening of the arteries. This is indicated by increasing the additions of the elements iron, zinc and selenium in addition to containing the powder seeds of pumpkin and powdered ginger root, as well as powder roots of moghat a high proportion of volatile oils, one of the antioxidants that work to purify blood of free radicals and increase vitality.

Keywords: Macaroni, Durum Wheat, Ginger Seed Dry Powder, Moghat Seed Dry Powder

INTRODUCTION

Wheat and Wheat products are long recognized as major staple, and a source of calories and significant quantities of other nutrient (vitamins, minerals and dietary fiber) in people diets (Sidhu *et al.*, 1999). Whole grains provide wide range of nutrients and biological active constituents such as vitamin B and vitamin E and minerals such as selenium, zinc, copper, magnesium and photochemical such as phenol compounds, which synergistically contribute to reduce the incidence of various chronic diseases. Adam *et al.* (2003) stated that wheat is the most important cereal crop production and consumption in the world.

Malcolmson *et al.* (1993) found that durum wheat contained protein and ash from 11.8-18.3% and 1.52-1.80% while for semolina they were 10.3-17.3 and 0.62-0.78%, respectively. This investigation their fore was carried out to study the production of healthy pasta formula made from semolina varieties and additives such as ginger, moghat and pumpkin seed dry powder which were intended for people suffering from obesity and over weight.

Torres *et al.* (2007) found that pasta semolina showed higher amounts of protein, dietary fiber, calcium, phosphorus, magnesium, and zinc and antioxidant capacity than control.

Vetrimani *et al.* (2005) found that effect of extraction rate of wheat flour on the quality of vermicelli .In order to develop newer varieties of vermicelli with improved nutritional quality, studies were carried out on the quality of vermicelli as influenced by different extraction rate of wheat flour, from 66 to 100%. Chemical studies carried out showed considerable variation among the flours. With increase in extraction rate. The results show the possibility of making vermicelli from either 100% extraction rate flour or whole-wheat flour, which could be a product of better nutritional value.

Shanthi *et al.* (2005) mentioned many studies on wheat based composite flour for pasta products.were studied Composite flour blends were used to develop high-quality pasta products. The resulting products' cooking quality and physicochemical, organoleptic and mechanical properties were assessed. Cooking time of the pasta products ranged from 8.13 to 9.27 minutes. The highest cooking time was recorded for the blend of rage (20%), Soya flour (10%) and whole wheat and refined wheat flour (70%). However, no significant difference was observed among the organoleptic parameters studied, viz. color, appearance, flavor, texture, taste and acceptability .

MATERIALS AND METHODS

Semolina as a control was obtained from local market. New varieties of semolina were obtained from the farm of the plant production department in Environmental Agric. Sic. Fact. of Arish, Suez Canal, University.Ginger dry powder, Moghat dry powder and Pumpkin seed dry powder were obtained from local market, in Arish Sinai.

Pasta samples were processed in the Food Technology Research Institute Laboratory, Agricultural Research Center. The ingredients used in pasta preparation were control semolina, Amar semolina, Sohag semolina and Banyswif semolina and pasta were prepared according to Bean *et al.* (1974). Healthy pasta was prepared by adding some medicinal plants such at5%ginger,10%moghat and15% pumpkin seed dry powder to the raw materials which was used for this samples, the healthy pasta was prepared it consists of control semolina, New varieties semolina and some additives each different dough blend of healthy pasta was prepared by partial replacement of durum semolina, The formula of this blends are shown in Table (1).

Healthy pasta was as processed in macaroni machine (Model Marcato. Atlas), made in Italy. The pasta products made from these samples 1, 2, 3, and 4 grade were formed out of dough strands extruded at a pressure of 90 kg/cm^2. The pasta was dried at temperature of 45°C for 10 hr. (Fabriani *et al.* 1967) then packed in polyethylene bags and stored at room temperature until analysis.

Chemical analysis:

Moisture, protein, ash, crude fiber, ether extract, starch and reducing and non reducing sugars content were determined according to the methods described in A.O.A.C. (2005). Total carbohydrates were calculated by difference.

Determination of minerals:-

Zinc, iron, calcium, potassium, sodium, phosphorus and magnesium were determined in the all raw materials before and after cooking by using a Pye Unicom sp. 1900 atomic absorption spectroscopy technique as described by AOAC (2005).

Cooking quality of Healthy pasta:-

The cooking quality i.e. the percentage weight increase, the percentage volume increase and cooking loss of all samples were calculated according to the method described by (Walsh and Gilles 1971)

Organoleptic properties

Organoleptic properties were carried out according to Toyokawa *et al.* (1989).

Table (1): Formulas of different healthy pasta blends.

Formula No.	Commercial semolina (%)	Amar semolina (%)	Sohag semolina (%)	Banyswif semolina (%)	Ginger dry powder (%)	Moghat dry powder (%)	Pumpkin seed dry powder (%)
F1	100	-	-	-	-	-	-
F2	-	100	-	-	-	-	-
F3	-	95	-	-	5	-	-
F4	-	90	-	-	10	-	-
F5	-	85	-	-	15	-	-
F6	-	95	-	-	-	5	-
F7	-	90	-	-	-	10	-
F8	-	85	-	-	-	15	-
F9	-	95	-	-	-	-	5
F10	-	90	-	-	-	-	10
F11	-	85	-	-	-	-	15
F12	-	-	100	-	-	-	-
F13	-	-	95	-	5	-	-
F14	-	-	90	-	10	-	-
F15	-	-	85	-	15	-	-
F16	-	-	95	-	-	5	-
F17	-	-	90	-	-	10	-
F18	-	-	85	-	-	15	-
F19	-	-	95	-	-	-	5
F20	-	-	90	-	-	-	10
F21	-	-	85	-	-	-	15
F22	-	-	-	100	-	-	-
F23	-	-	-	95	5	-	-
F24	-	-	-	90	10	-	-
F25	-	-	-	85	15	-	-
F26	-	-	-	95	-	5	-
F27	-	-	-	90	-	10	-
F28	-	-	-	85	-	15	-
F29	-	-	-	95	-	-	5
F30	-	-	-	90	-	-	10
F31	-	-	-	85	-	-	15

RESULTS AND DISCUSSION

In order to produce healthy pasta formulas by replacing part of its semolina content. Semolina from different Durum wheat varieties which were cultivated and named as (Amar semolina, Sohag semolina and Banyswif semolina) were formulated with some additives such as ginger,moghat and pumpkin seed dry powder in the current investigation. The replacement percentage was 5, 10 and 15% for each semolina varity using ginger, moghat and pumpkin seed dry powder. The obtained results were presented and discussed as follows:

Proximate chemical composition of raw materials:

Proximate chemical composition(moisture,crude protein, ether extract, crude fiber, ash and available carbohydrates contents) of raw materials were analyzed and results are shown in Table (2) Proximate chemical composition was carried out for semolina and different additives. The moisture content in control semolina and Amar semolina was 14%, while in Sohage smolina and Banyswif semolina was 13.85 and 13.92% respectively. But, moisture content in ginger, moghat and pumpkin seed dry powder was 9.10, 9.62 and 6.10%, respectively.The crude protein content in control semolina was 11.30%, while in used different semolina was ranged from 10.29 to 10.89%. But in ginger and moghat powder it was 7.90 and 6.02%, respectively. On the other hand, The crude protein in the pumpkin seed powder was 34.35%. The ether extract, crude fiber and ash content were high in the ginger, moghat and pumpkin seed dry powder compaired with all semolina. The percentage of crude protein, ether extract, crude fiber, and ash obtained results were shown in chimical composition of raw materials were analyzed in Table 6. From the results presented in Table (2). it could be noticed that the Amar semolina, Sohag semolina and Banyswif semolina were 10.89, 10.35 and 10.29% for protein percentage compared to control which recorded 11.3%, respectively.Fat percentage were 0.89, 0.86 and 0.84% compared to control 0.9% respectively.0.38, 0.36 and 0.39% for fiber percentage compared to control 0.4%, respectively 0.66, 0.64 and 0.6% ash percentage compared to control 0.72%, respectively. Total carbohydrates were calculated by the difference.From the previous results it could be revealed that pumpkin seed dry powder contained the highest percentage of protein while the lowest percentage was observed in Moghat.Where as the highest content of ash was observed in ginger and the lowest content was observed in Banyswif semolina. Total lipids were high in pumpkin seed dry powder 34.51% where as lipids in Amar semolina was 0.89. The highest value in fiber was observed in moghat dry powder 11.22%. Total carbohydrates were 10.15% low value in pumpkin seed dry powder. These resultes agreemented with those mentioned by many outhers such as Abd El Magid. *et al.* (1991), and Aalami *et al.* (2007).

Table (2): Chemical composition of raw materials.

Ingredients	Chemical composition (%) (on dry weight basis)					
	Moisture	Crude protein	Ether extract	Crude fiber	Ash	Available* carbohydrate
Control semolina	14.00	11.30	0.90	0.40	0.72	86.68
Amar semolina	14.00	10.89	0.89	0.38	0.66	87.18
Sohag semolina	13.85	10.35	0.86	0.36	0.64	87.79
Banyswif semolina	13.92	10.29	0.84	0.39	0.60	87.88
Ginger dry powder	9.10	7.90	3.10	2.10	7.10	79.80
Moghat dry powder	9.62	6.02	5.00	11.22	5.11	72.65
Pumpkin seed dry powder	6.10	34.35	34.51	10.20	4.10	10.15

* Available carbohydrate calculated by difference.

Table (3): Minerals contents mg/100gram of raw materials

Ingredients	Minerals contents all values (on dry weight basis)								
	Ca	Na	K	P	Mg	Fe	Zn	Mn	Se*
Control semolina	49.11	20.98	607.3	148	287.3	1.39	2.26	1.98	4.6
Amar semolina	48.00	20.3	606	146.4	287	1.34	2.27	1.88	4.4
Sohag semolina	47.90	20.4	605	146.3	286.1	1.32	2.5	1.78	4.8
Banyswif semolina	47.6	20.1	607	147	288	1.11	2.18	1.6	4.7
Ginger dry powder	18	15	416	26.8	46	0.429	0.36	0.24	0.8
Moghat dry powder	374	78	465	432	398	3.491	2.39	1.88	2.79
Pumpkin seed dry powder	562	266.9	23	1129	303.66	7.2	4.57	0.56	1.6

Se*PPm.

Minerals content of raw materials:

Results in Table (3) show that control semolina, Amar semolina, Sohag semolina, Banyswif semolina,ginger, moghat and pumpkin seed dry powder contained 20.98, 20.3, 20.4, 20.1, 15, 78 and 266.9 mg/100 gm dry matter of sodium,respectively. From the same Table, it could be noticed that, pumpkin seed dry powder had the lowest content of potassium 23 mg/100 gm. On the other hand, moghat and pumpkin seed dry powder had the highest amount of Magnesium 398 and 303.66 mg/100 gm dry matter, respectively. Mean while, ginger dry powder had the lowest amount 46 mg/100 gm of magnesium. Results also show that, pumpkin seed dry powder had the highest amount of calcium 562 mg/100 gm dry mater. However, ginger dry powder had the lowest amount of iron,calcium, phosphorus, zinc, manganese and selenium 0.429, 18, 26.8, 0.360, 0.800 mg/100 gm dry mater respect and 0.24 respectively compared to control semolina. These results were found to be in agreement with those mentioned by both Asiegbu (1987) and Glew *et al.* (2006).

Chemical composition of healthy pasta from different Semolina formula.

Chemical composition of healthy pasta formula for Amar semolina and its blends from different additives of ginger,moghat and pumpkin seed dry powder in 5, 10 and 15% respectively analyzed for protein, fat, fiber, ash and total carbohdrates obtained results were shown in Table (4). It could be noticed that the protein percentage Amar semolina at 5% ginger, Amar semolina at 10% moghat and Amar semolina at 15% pumpkin seed dry powder were 11.29, 11.49 and 12.61%, respectively. The fat percentage in this formula were 1.05, 1.39 and 2.62%, respectively. The fiber percentage in this formula were 0.49, 1.50 and 0.89% respectively. Ash percentage in this formula were 1.02, 1.17 and 0.87% respectively. Total carbohydrates were calculated by the difference. From the previous results, it could be revealed that formula processing pasta from Amar semolina at 15% pumpkin seed dry powder contained the highest percentage of fat 2.62%. While the lowest percentage of fat observed in pasta formula which processed from Amar semolina at 5% ginger dry power had 1.05%. The highest percentage of protein in pasta formula which processed from Amar semolina at 15% pumpkin seed dry powder was12.61% while the lowest percentage observed in pasta formula which processed from Amar semolina at 5% moghat dry powder had 11.19%. The highest percentage of ash 1.73% was observed in pasta formula which processed from Amar semolina at 15% ginger dry powder and the lowest percentage 0.87% observed in pasta formula which processed from Amar semolina at 15% pumpkin seed dry powder. Also it could be noticed that protein percentage in Sohag semolina at 5% ginger, Sohag semolina at 10%Moghat and Sohag semolina at 15%Pumpkin seed dry powder were 11.47, 11.71 and 14.63%, respectively.Fat percentage in this formula were 0.97, 1.28 and 6.98%, respectively. Fiber percentage in this formula were 0.45, 1.47 and 1.86%, respectively.Total carbohydrates were calculated by the difference. Ash percentage in this formula were 1.62, 1.35 and 1.35%, respectively. From the previous results it could be revealed that formula processing pasta from Sohag semolina at 5% ginger dry powder contained the lowest percentage of fat 0.97%. The highest percentage of fat was observed in pasta formula which processed from Sohag semolina at 15% pumpkin seed dry powder was 6.98%. The highest percentage of protein in pasta formula which processed from Sohag semolina at 15% pumpkin seed dry powder was14.63%. While the lowest percentage observed in pasta formula which processed from Sohag semolina at 5% ginger dry powder 10.99%. The highest percentage of ash observed in pasta formula which processed from Sohag semolina at 5% ginger dry powder 1.62% and the lowest percentage was observed in pasta formula which processed from Sohag semolina at 10% ginger dry powder 1.02% compared to control. Total carbohydrates were high in formula processing pasta from Sohag semolina at 10% ginger dry powder 87.22%. While the lowest percentage observed in Sohag ginger, Banyswif semolina at 10% moghat and Banyswif semolina at 15% pumpkin seed dry powder were 10.36, 10.61 and 14.61%, respectively. Fat percentage in this formula were 0.95, 1.26 and 7.24%, respectively. Fiber percentage in this formula were 0.4, 1.46 and 1.85%, respectively. Total carbohydrates percentage in this formula were 86.77, 85.62 and 75.23%, respectively. Ash percentage in this formula were 0.92, 1.05 and 1.07% respectively. From the previous results,it could be revealed that in pasta formula which processed from Banyswif semolina at 5% ginger dry powder contained the lowest percentage of fat and fiber 0.95 and 0.4%, respectively. The highest percentage of fat was observed in pasta formula semolina at 15% pumpkin seed dry powder 75.18%. The resultes in the same Table indicated that protein percentage in Banyswif semolina at 5% which processed from Banyswif semolina at 15% pumpkin seed dry powder was 7.24% the highest percentage of protein in pasta formula which processed from Banyswif semolina at 15% pumpkin seed dry powder was14.61%. While the lowest percentage observed in pasta formula which processed from Banyswif semolina at 10% ginger dry powder was 10.08%. The highest percentage of ash observed in pasta formula which processed from Banyswif semolina at 15% pumpkin seed dry powder. While the lowest percentage observed in pasta formula which processed from Banyswif semolina at 5% ginger dry powder. Total carbohydrates were high in pasta formula which processed from Banyswif semolina at 5% ginger dry powder 86.77%. While the lowest percentage observed in Banyswif semolina at 15% pumpkin seed dry powder 75.23%. These results were found to be in agreement with those mentioned by both Abd El-Magid *et al.* (1991) and Aalami *et al.* (2007).

Minerals contents of healthy pasta from different semolina formula.

Results in Table (5) minerals contents of semolina Amar and its blends. show that control semolina, Amar semolina, Amar semolina 5% ginger, Amar semolina %10 ginger, Amar semolina 15% ginger, Amar

semolina 5% moghat, Amar semolina l0% moghat, Amar semolina l5% moghat dry powder, Amar semolina 5% pumpkin seed, Amar semolina 10% pumpkin seed and Amar semolina 15% pumpkin seed dry powder were contained 6.98, 21.3, 20.67, 20.35, 24.58, 35.32, 31.57, 41.86 and 55.43 mg/100 gm dry matter of sodium, respectively. From the same Table, it could be noticed that. Amar semolina 15% pumpkin seed had the lowest content of potassium 519 mg/100 gm. On the other hand, Amar semolina l0% moghat and 15% pumpkin seed dry powder had the highest amount of magnesium 331.8 and 336.5 mg/100 gm dry matter, respectively. Mean while, Amar semolina 5% moghat had the lowest amount 0.84 mg/100 gm of iron. Results also show that, Amar semolina 15% pumpkin seed had the highest amount of calcium 768.3 mg/100 gm dry mater. However, Amar semolina 5% ginger had the low amount of iron, calcium, phosphorus, zinc and manganese 0.99, 49.86, 100, 2.308 and 1.79 mg/100 gm dry mater respectvely.compared to control semolina.Also Sohag Semolina, Sohag semolina 5% ginger, Sohag semolina 10% ginger, Sohag semolina 15% ginger, Sohag semolina 5% moghat, Sohag semolina l0% moghat, Sohag semolina l5% moghat dry powder, Sohag semolina 5% pumpkin seed, Sohag semolina 10% pumpkin seed and Sohag semolina 15% pumpkin seed dry powder were contained 6.98, 20.4, 21.15, 19.56, 19.48, 23.86, 29.3, 30.92, 30.76, 40.88 and 54.6 mg/100 gm dry matter of sodium, respectively. From the same Table, it could be noticed that, Sohag semolain 10% pumpkin seed had the lowest content of potassium 528 mg/100 gm.On the other hand, Sohag semolina l0% moghat and Sohag semolina 15% pumpkin seed dry powder had the highest amount of magnesium 325.9 and 331.64 mg/100 gm dry matter, respectively.

Table (4): Chemical composition of healthy pasta from different semolina formula.

Semolina source	Additives (%)	Formula No.	Components (%) all values mg/100 gram On dry weight basis				
			Crude protein	Ether extract	Ash	Crude fiber	*Available carbohydrate
Control		F1	11.30	0.90	0.72	0.40	86.68
Amar	Without	F2	10.89	0.89	0.66	0.38	87.18
	Ginger	F3	11.29	1.05	1.02	0.49	86.15
		F4	11.18	1.20	1.37	0.59	85.16
		F5	12.08	1.36	1.73	0.70	84.13
	Moghat	F6	11.19	1.14	0.92	0.94	85.81
		F7	11.49	1.39	1.17	1.50	84.45
		F8	11.79	1.64	1.43	2.06	83.08
	Pumpkin seed	F9	12.61	2.62	0.87	0.89	83.01
		F10	14.33	4.34	1.07	1.40	78.23
		F11	14.04	6.07	1.28	1.91	76.70
Sohag	Without	F12	10.35	0.87	0.64	0.37	86.90
	Ginger	F13	10.75	1.02	0.01	0.45	86.00
		F14	11.14	1.19	1.35	0.56	87.20
		F15	11.54	1.33	1.86	0.64	85.70
	Moghat	F16	10.65	1.11	0.90	0.87	86.00
		F17	10.95	1.28	1.15	1.47	85.30
		F18	11.25	1.48	1.41	2.11	84.50
	Pumpkin seed	F19	12.07	2.99	0.87	0.92	82.70
		F20	13.79	4.13	1.05	1.38	78.80
		F21	15.5	6.08	1.26	1.86	75.20
Banyswif	Without	F22	10.29	0.85	0.6	0.35	86.96
	Ginger	F23	10.69	0.95	0.96	0.5	86.77
		F24	11.08	1.07	1.31	0.55	87.04
		F25	11.48	1.05	1.69	0.63	85.89
	Moghat	F26	10.59	1.18	0.82	0.86	86.40
		F27	10.89	1.26	1.31	1.46	85.62
		F28	11.19	1.47	1.27	2.07	68.90
	Pumpkin seed	F29	12.01	2.97	0.81	0.89	83.11
		F30	13.73	5.11	1.01	1.36	79.18
		F31	14.61	7.24	1.22	1.85	75.23

* Available carbohydrate calculated by difference

Table(5): Minerals contents mg/100 gram of healthy pasta from different semolina formula.

Semolina source	Additives (%)	Formula No.	Minerals content all values-- On dry weight basis								
			Ca	Na	K	P	Mg	Fe	Zn	Mn	Se*
Control		F1	49.11	20.98	607.3	148	287.3	1.39	2.26	1.98	4.6
Amar	Without	F2	48.00	20.3	606	146.4	287	1.34	2.27	1.88	4.4
	Ginger	F3	49.86	20.96	596	100.00	278.30	0.99	2.31	1.79	4.22
		F4	45.90	20.67	586	96.28	266.50	0.96	2.21	1.72	4.04
		F5	44.35	20.35	576	92.40	254.20	0.93	2.10	1.63	3.86
	Moghat	F6	65.25	24.58	599	120.30	296.30	0.84	2.41	1.88	4.31
		F7	86.00	35.32	593	146.90	331.80	0.98	2.65	2.08	4.23
		F8	97.80	31.15	589	153.30	307.10	1.12	2.41	1.88	4.15
	Pumpkin seed	F9	284.50	31.57	577	170.20	291.60	1.33	2.52	1.81	3.82
		F10	520.40	41.86	548	236.60	292.20	1.64	2.63	1.75	4.12
		F11	768.30	55.43	519	318.30	336.50	2.35	3.10	1.96	3.98
Sohag	Without	F12	47.9	20.4	605.7	146.3	286.1	1.32	2.5	1.78	4.8
	Ginger	F13	46.96	21.15	606.3	100	289.5	1.38	2.27	1.79	4.60
		F14	43.1	19.56	596.3	90.00	273	1.27	2.05	1.615	4.40
		F15	41.12	19.48	586.4	88.10	267	1.23	1.94	1.528	4.20
	Moghat	F16	62.52	23.86	576.6	114	249.4	0.83	2.26	1.797	4.69
		F17	83.60	29.30	599.7	141	325.9	0.98	2.49	2.01	4.59
		F18	94.7	30.92	593.2	174.2	302	1.11	2.25	1.779	4.49
	Pumpkin seed	F19	280.1	30.76	589.1	163.9	286.2	1.63	2.35	1.712	4.64
		F20	517.2	40.88	577.4	230.3	287.5	1.94	2.47	1.648	4.48
		F21	765.4	54.60	548.5	312.00	331.6	2.66	2.94	1.86	4.32
Banyswif	Without	F22	47.6	20.1	607.4	147	288	1.11	2.18	1.6	4.7
	Ginger	F23	45.19	16.85	606	108.4	277.4	1.17	2.00	1.61	4.5
		F24	41.32	16.57	596	99.82	260	1.05	1.77	1.49	4.31
		F25	39.68	16.51	586	95.46	248.2	1.02	1.67	1.43	4.11
	Moghat	F26	60.37	20.83	576	123.3	290.3	0.82	1.98	1.67	4.59
		F27	81.43	24.80	599	150.2	325	0.97	2.22	1.787	4.5
		F28	93.13	27.22	593	156.9	301	1.10	1.97	1.66	4.4
	Pumpkin seed	F29	279.30	27.73	589	173	285.6	1.42	2.08	1.59	4.54
		F30	515.70	37.66	577	240	286	1.73	2.19	1.52	4.39
		F31	763.6	50.23	548	321.3	330.6	2.45	2.67	1.68	4.23

Se*PPm.

Mean while, Sohag semolina 5% moghat had the lowest amount 0.83 mg/100 gm. of iron. Results also show that, Sohag semolina 15% Pumpkin seed had the highest amount of calcium 765.4 mg/100 gm. dry mater. However, Sohag semolina at 5% ginger dry powder had low amount of iron,calcium, phosphorus, zinc and manganese 1.383, 46.96, 100, 2.268 and 1.791 mg/100 gm.dry mater respectvely, compared to Control. On the other hand Banyswif semolina, Banyswif semolina at 5% ginger, Banyswif semolina at 10% ginger, Banyswif semolina at 15% ginger dry power, Banyswif semolina at 5% moghat, Banyswif semolina at 10% moghat Banyswif semolina at 15% moghat dry powder, Banyswif semolina at 5% pumpkin seed, Banyswif semolina at 10 % pumpkin seed, Banyswif semolina at 15 % pumpkin seed dry powder were contained 6.98, 16.1, 16.85, 16.57, 16.51, 20.83, 24.8, 27.22, 27.73, 37.66 and 50.23 mg/100 gm dry matter of Sodium, espectively. From the same table,it could be noticed that, Banyswif semolain at 10% pumpkin seed had the lowest content of potassium 539 mg/100 gm. On the other hand, Banyswif semolain at 10% moghat dry powder and Banyswif semolina at 15% pumpkin seed dry powder had the highest amount of magnesium 325 and 330.6 mg/100 gm dry matter respectively. Mean while Banyswif semolina at 5% moghat dry powder had the lowest amount 0,82 mg/100 gm of iron. Results also show that, Banyswif semolina at 15% pumpkin seed dry powder had the highest amount of calcium 763.6 mg/100 gm. dry mater. However, Banyswif semolina at 15% ginger dry powder had the low amount of iron, calcium, phosphorus, zinc and manganese 1.02, 39.68, 95.46, 1.67 and 1.43 mg/100 gm dry mater, respectvely, compared to control. These results were found to be in agreement with those obtained by Asiegbu (1987) and Glew *et al.* (2006).

Oranoleptic properties of healthy pasta

Healthy pasta blends was tasted by ten panelists with respect of healthy pasta quality characteristics,

color ,surface appear, hardness ,stickiness, smoothness, taste. and total score .

Oranoleptic properties of healthy pasta from semolina formola.

The Table (6) shown the data of color and surface appear are major quality factors of healthy pasta fortified with dry powder at all concentration levels (5, 10 and 15%) were in general better than healthy pasta. process from dry powder improves more amber yellowish color for healthy pasta The panel scoring revealed that healthy pasta enriched with improved. Smoothness and taste. Each of appearance, hardness, stickiness, of healthy pasta enriched with 5% ginger dry power were inferior to either the control. The total score indicated that, the healthy pasta enriched with 10% moghat dry powder was upper was superior followed by that fortified by 15% pumpkin seed dry powder. These results are inagreement with those obtained by ***Abo-el-Naga (1995)*** and ***Martinez et al. (2007)***.

Cooking Quality healthy pasta:

The cooking quality of healthy pasta, i.e weight, volume and cooking loss (t.s.s) were evaluated in the studied healthy pasta and it blends which fortefied with ginger, moghat and pumpkin seed dry powder at lsevels of 5, 10 and 15%, respectively .

Weight volume, and cooking loss in healthy pasta Semolina and its blends:

From the results presented in Table (7), it could be observed that the healthy pasta and its blends made from semolina at level addition 5, 10 and 15% ginger, moghat and pumpkin seed dry powder, respectively,caused weight increase to 165, 168 and 169% when addition to ginger dry powder. Also weight increase to 155, 160 and 165% when addition to moghat dry powder as well as weight increase to 165, 170 and 180% when addition to pumpkin seed dry powder respectively compared with control. Amar semolina which recorded 160%. Tabulted resultes cleared that the addition of 5, 10 and 15% from ginger, moghat and pumpkin seed dry powder respectively, caused weight increase, volume increase and cooking loss on the all level different addition compared with control. (Amar semolina, Sohag semolina and Banyswif semolina). These resultes agremented with Nadia and Nassef (2004) and Vetrimani *et al.* (2005).

Table (6): Organoleptic properties of cooked healthy pasta prepared from different semolina formula.

Semolina source	Additives (%)	Formula No.	Characteristics						
			Color (30)	Surface (20)	Hardness (10)	Stickness (20)	Smothness (10)	Taste (10)	Total (100)
Control		F1	30	20	10	20	10	10	100
Amar	Without	F2	29	19	10	19	9	8	94
	Ginger	F3	29	19	9	19	7	8	91
		F4	27	19	9	19	7	7	88
		F5	27	18	8	19	7	7	86
	Moghat	F6	27	18	8	18	8	8	87
		F7	28	19	9	18	8	7	89
		F8	27	17	8	17	8	7	84
	Pumpkin seed	F9	27	17	8	18	8	8	86
		F10	28	18	7	18	8	9	88
		F11	27	18	7	19	9	9	89
Sohag	Without	F12	29	19	9	19	9	8	93
	Ginger	F13	28	19	9	19	7	8	90
		F14	27	19	8	19	7	8	88
		F15	27	18	8	19	7	7	86
	Moghat	F16	27	18	8	18	8	7	86
		F17	28	19	9	18	8	7	89
		F18	27	17	8	17	8	7	84
	Pumpkin seed	F19	27	17	8	18	8	8	86
		F20	28	18	7	18	8	8	87
		F21	27	18	7	19	9	8	88
Banyswif	Without	F22	29	19	9	19	9	8	93
	Ginger	F23	28	19	8	19	7	8	89
		F24	27	19	8	19	7	8	88
		F25	27	18	8	19	7	7	86
	Moghat	F26	27	18	8	18	8	7	86
		F27	28	19	9	18	7	7	88
		F28	27	17	8	17	8	7	84
	Pumpkin seed	F29	27	17	8	18	8	8	86
		F30	27	18	7	18	8	8	86
		F31	27	18	7	19	8	8	87

Table (7): Physical properties of cooked healthy pasta prepared from different semolina formula.

Semolina source	Additive type	Formula No.	Physical propeties				
			Weight* cooked (g)	Weight increase (%)	Volume** cooked (g)	Volume increase (%)	Cooking loss (%)
Control		F1	270	170	300	190	8.9
Amar	Without	F2	260	160	290	190	9.6
	Ginger	F3	265	165	295	195	10.0
		F4	268	168	297	197	11.0
		F5	269	169	307	207	11.5
	Moghat	F6	255	155	295	195	9.6
		F7	260	160	300	200	10.5
		F8	265	165	305	205	11.5
	Pumpkin seed	F9	265	165	297	197	10.0
		F10	270	170	300	200	11.0
		F11	280	180	305	205	11.6
Sohag	Without	F12	250	150	280	180	10.5
	Ginger	F13	260	160	285	185	11.0
		F14	263	167	297	197	11.0
		F15	269	169	307	207	12.0
	Moghat	F16	265	165	295	195	8.0
		F17	270	170	290	190	9.5
		F18	268	168	285	185	10.0
	Pumpkin seed	F19	277	177	286	186	12.0
		F20	280	180	290	190	13.0
		F21	285	185	300	200	14.0
Banyswif	Without	F22	256	156	290	190	10.0
	Ginger	F23	256	156	290	190	10.0
		F24	258	157	297	197	11.0
		F25	263	167	307	207	12.0
	Moghat	F26	255	155	295	195	8.0
		F27	260	160	300	200	9.0
		F28	265	165	305	205	10.0
	Pumpkin seed	F29	245	145	287	187	11.0
		F30	250	150	290	190	12.0
		F31	275	175	295	195	14.0

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تقيم إنتاج المكرونة من بعض أصناف قمح الديورم الجديدة المزرعة في سيناء والمدعمة بمسحوق جذور الزنجبيل والمغات وبذور القرع العسلي

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أجريت هذه الدراسة لإنتاج المكرونه من سيمولينا قمح الديورم للأصناف الثلاثة (عمار - سوهاج- بني سويف والمدعمة بمساحيق بعض النباتات الطبية الغنية في محتواها من الألياف – البروتين – الدهن- الأملاح المعدنية - مضادات الأكسدة وهي (مسحوق جذور الزنجبيل – مسحوق جذور المغات – مسحوق بذور القرع العسلي) وذلك لإنتاج مكرونة ذات قيمة غذائية وطبية عالية. وقد دعمت بنسب ٥% -١٠%- ١٥% من المسحوق الكامل للنباتات الثلاثة السابقة مع دراسة تأثير الإضافات على الخواص الطبيعية و الكيميائية للمكرونة المنتجة. كما تم دراسة خواص الطهي للمكرونه الناتجة وكذلك قيمتها الغذائية و الحيوية

١-إنتاج مكرونة من سيمولينا قمح الديورم من الأصناف الثلاثة عمار وسوهاج وبني سويف وذلك لأنة الأكثر تحملا للجفاف والملوحة وتميز المكرونة الناتجة منهم في الصفات الحسية والطبيعية والكيميائية .

٢-إنتاج مكرونة من سيمولينا قمح الديورم من صنف عمار المدعمة بالاتي:-

التدعيم بنسبة ٥ %مسحوق جذور الزنجبيل وتميز المكرونة الناتجة منة في الصفات الحسية والطبيعية والكيميائية والبيولوجية حيث أنة يحتوى على نسب عالية من الدهون والسيلينيم (Se)-والزنك(Zn)وهى مواد مضادة للأكسدة .

التدعيم بنسبة ١٠% مسحوق جذور المغات وتميز المكرونة الناتجة منة في الصفات الحسية والطبيعية والكيميائية والبيولوجية حيث أنة يحتوى على نسب عالية من الأملاح المعدنية وخاصة الحديد(Fe)والكالسيوم(Ca)والصوديوم (Na) و البوتاسيوم (K) والماغسيوم (Mg)والفسفور(P)والمنجنيز (Mn) إلى جانب الكربوهيدرات والبروتين وهذا يؤدى إلى ارتفاع القيمة الغذائية للمكرونة الناتجة .

التدعيم بنسبة ١٥% مسحوق بذور القرع العسلي وتميز المكرونة الناتجة منة في الصفات الحسية والطبيعية والكيميائية والبيولوجية حيث أنة يحتوى على نسب عالية من البروتين الخام والدهن وهذا يؤدى إلى ارتفاع القيمة الغذائية للمكرونة الناتجة . ويحتوى على مواد تعمل على خفض ضغط الدم

٣- أوضحت النتائج أن التدعيم بنسبة ٥% مسحوق جذور الزنجبيل، التدعيم بنسبة ١٠% من مسحوق جذور المغات و التدعيم بنسبة ١٥% مسحوق بذور القرع العسلي إلي أصناف السيمولينا المختلفة أدت إلي زيادة المكونات الكيمائية وخاصة المحتوي من البروتين والدهن والألياف والأملاح المعدنية وبالتالي تحسين نوعية المنتج وكشفت الدراسة أن أفضل الإضافات هي النسب الموضحة سابقا وذلك لإمكانية التغلب علي بعض المشاكل الصحية مثل الأنيميا –لين العظام – وتصلب الشرايين. وقد دل علي ذلك زيادة محتوي الإضافات من عناصر الحديد والزنك والسيلينيم بالإضافة إلي احتواء مسحوق بذور القرع العسلي و مسحوق جذور الزنجبيل وكذا مسحوق جذور المغات على نسبة عالية من الدهون وهي من المواد المضادة للأكسدة والتي تعمل علي تنقية الدم من الشقوق الحرة وزيادة الحيوية.