RESULTS AND DISCUSSION

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1. Milling

From Table (1) the moisture and mill fractions (flour, semolina, bran and shorts) were presented and show the 100% Turkey wheat gave the high extraction than American white wheat followed by American Red wheat and its were 69.5%, 64.2% and 59.7% flours respectively.

Concerning semolina, bran and shorts there were differences between Turkey wheat and American white and Red wheats. This may be due to Turkey grain considered weak than American white and Red grains in protein and ash content. In hard wheat the flour yield were lower than 62% and depending on grain hardness. While the flour yield of wheat white (soft) and was higher than 62% and also high in Turkey wheat **(Lorenz 1972) and (Maldle and Tsen 1973).**

Table (1): Moisture and Mill fractions for Turkey, American white and Red wheats with different levels of its.

Samples	Moisture of wheat %	Mill Flour %	Fractions * %
1	10.5	69.5	30.5
2	10.3	68.9	31.1
3	10.1	66.0	34.0
4	9.3	65.7	34.3
5	9	64.2	35.8
6	9	62.8	37.2
7	9	61.9	38.1
8	9	61.9	38.1
9	9	59.7	40.3

* : (semolina + Shorts + germ + Bran)

1 : 100% Turkey wheat flour

2 : 75% Turkey wheat flour + 25% American White wheat flour

3 : 50% Turkey wheat flour + 50% American White wheat flour

4 : 25% Turkey wheat flour + 75% American White wheat flour

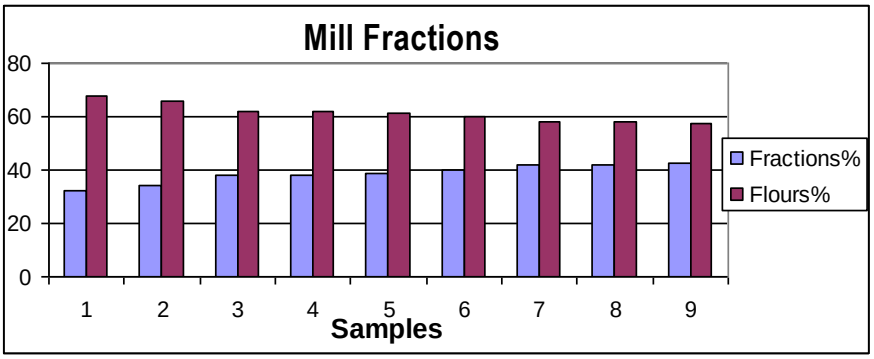
5 : 100% American White wheat flour

6 : 75% American White wheat flour + 25% American Red wheat flour

7 : 50% American White wheat flour + 50 % American Red wheat flour

8 : 25% American White wheat flour + 75% American Red wheat flour

9 : 100% American Red wheat flour



* : semolina + shorts + germ + bran

1 : 100% T.W.F

2 : 75% T.W.F + 25% A.W.W.F

3 : 50% T.W.F + 50% A.W.W.F

4 : 25% T.W.F + 75% A.W.W.F

5 : 100% A.W.W.F

6 : 75% A.W.W.F + 25% A.W.R.F

7 : 50% A.W.W.F+ 50 % A.W.R.F

8 : 25% A.W.W.F+ 75% A.W.R.F

9 : 100% A.W.R.F

Fig (1): Moisture and Mill fractions for Turkey, American white and Red wheats with different levels of its.

2- Chemical, Minerals and physical composition of flours for raw materials.

2-1 Chemical composition of different flours raw materials and different level of mixtures.

Hard Red Winter flour, Soft white flour and Turkey flour were analyzed for moisture, protein, ash, fiber and carbohydrates. The obtained results are shown in Table (2) and illustrated in Fig (2).

The results indicated Hard Red Winter flour contained the highest value in protein content (11.08%), fiber (0.91%), ash (0.61%) and fat (3.65%) while it showed the lowest value in total carbohydrates (72.21%). These data are in the same line with that obtained by **Farvili et al (1997) and Bedeir (2004).** Also, the results of 72% ext, flour was less than Turkey flour which reported by **Egyption Baking Technology Center (E.B.T.C) (2005)**. These differences may be due to the soil which the wheat was grown. The different ratios of American wheat Red flour and American wheat white flour (2, 3, and 4) in the same table the values of protein were decreased with the ratios of American wheat white flour increased. Also, you noticed that the mixtures of American wheat white flours with Turkey wheat gave high decreased with increased the ratios of Turkey

wheat flour. This return to the protein of Turkey wheat was lower than American wheat white. Its were clear in Table (2) and Fig (2). Also, fiber, ash and fat. While carbohydrate were simple increased.

Table (2): Chemical composition of different flours used American wheat (Red, White) flours and Turkey flour with different levels.

Sample	Moisture (%)	Protein (%)	Fiber (%)	Ash (%)	Fat (%)	Carboh-ydrates* (%)
1	11.54	11.08	0.91	0.61	3.65	72.21
2	11.8	10.91	0.9	0.64	3.57	72.48
3	12.0	10.61	0.92	0.68	3.55	72.24
4	11.9	10.22	0.9	0.62	3.52	72.84
5	12.7	10.01	0.88	0.55	3.60	72.26
6	12.0	9.52	0.82	0.51	3.66	73.49
7	12.1	9.66	0.80	0.46	3.50	73.48
8	12.1	9.42	0.89	0.55	3.63	73.41
9	13.0	8.83	0.86	0.57	2.63	74.11

*** By differences**

1 = 100% American Wheat Red flour

2 = 75% American Wheat Red flour + 25% American Wheat White flour

3 = 50% American Wheat Red flour + 50% American Wheat White flour

4 = 25% American Wheat Red flour + 75% American Wheat White flour

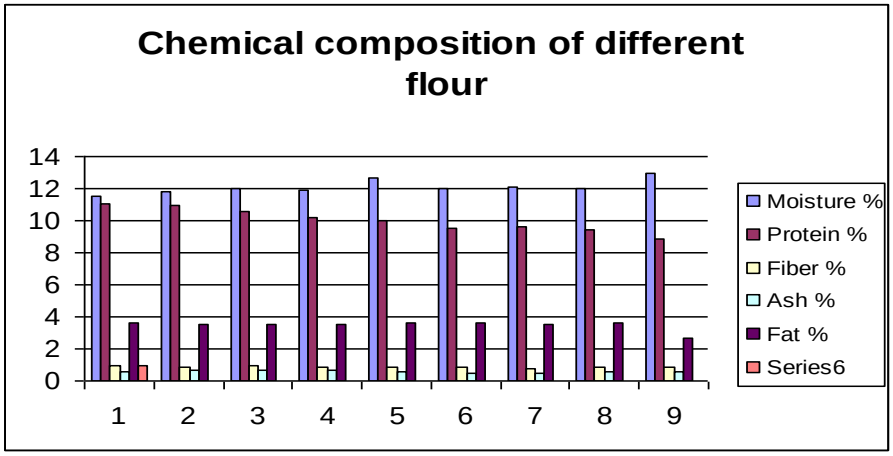
5 = 100% American Wheat White flour

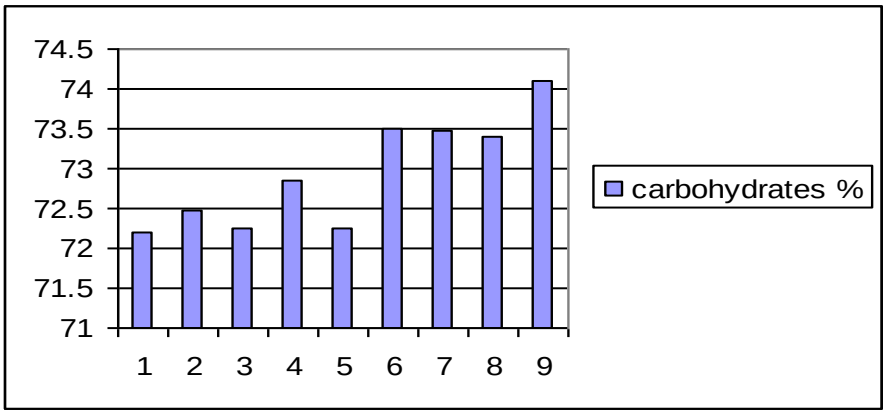
6 = 75% American Wheat White flour + 25% Turkey Wheat flour

7 = 50% American Wheat White flour + 50% Turkey Wheat flour

8 = 25% American Wheat White flour + 75% Turkey Wheat flour

9 = 100% Turkey Wheat flour





1 = 100% A.W.R.F

2 = 75% A.W.R.F + 25% A.W.W.F

3 = 50% A.W.R.F + 50% A.W.W.F

4 = 25% A.W.R.F + 75% A.W.W.F

5 = 100% A.W.W.F

6 = 75% A.W.W.F + 25% T.W.F

7 = 50% A.W.W.F + 50% T.W.F

8 = 25% A.W.W.F + 75% T.W.F

9 = 100% T.W.F

Fig (2): Chemical composition of different flours.

2-2 Determination minerals content of raw materials.

The minerals contribute 3 to 4% of the human body weight, and they play an important role in regulation of body huide, acid base balance and metabolic process.

The results presented in Table (3) show the minerals content of the used raw materials from these results; it could be observed that, American wheat Red flour contained the highest value of Mg 0.742 mg/100 g flour followed by American wheat white flour 0.681 and Turkey flour 0.405 mg/ 100g flour. Also, it was highest in K, Zinc, Mn and iron. While it was lower in Ca and Cu. The results are higher than those reported by **saleh (2003)**.

Pomeranz (1988) reported that wheat's varied widely in their chemical composition. Percentage of protein, minerals, Vitamins, pigments and enzymes showed a range to five fold among categories of wheat. Such differences had also relationship with environmental and soil under which the wheat was grown.

Table (3): Determination mineral content of

American wheat (Red & White flours) and Turkey flour (mg/ 100 g flour).

Flours / Mineral	Control	American Red flour	American White flour	Turkey flour
Mg	0.168	0.742	0.681	0.405
Na	0.503	0.682	0.829	0.283
Zn	0.249	0.903	0.671	0.617
Mn	0.02	0.71	0.66	0.43
Fe	0.54	1.95	1.77	1.63
Ca	2.07	3.56	3.29	3.62
K	0.494	3.555	3.489	1.873
Cu	0.298	0.454	0.493	0.710

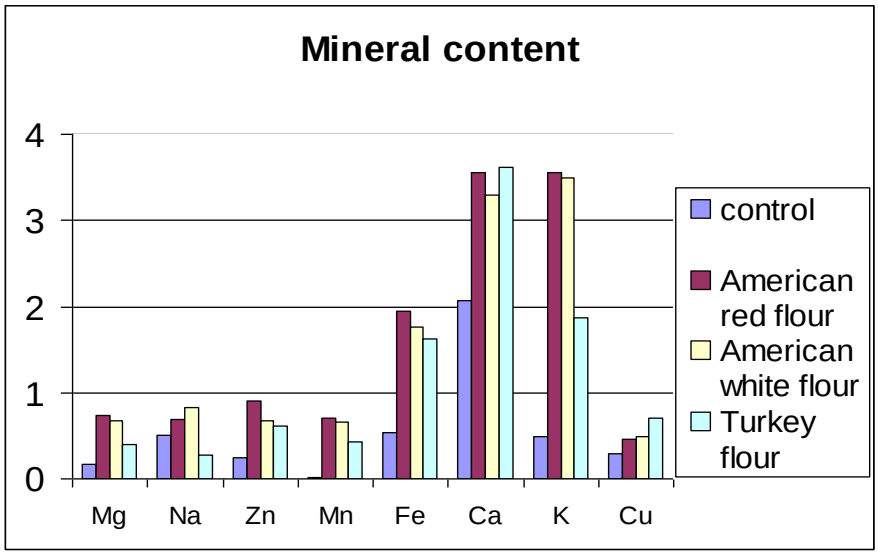


Fig (3): Determination mineral content of American wheat (Red & White) and Turkey flours (mg/ 100 g flour).

2-3 The physical composition of raw materials.

The protein content in wheat's, and it relation to the wet and dry gluten, is very important in determined the quality of flour.

The wet and dry gluten of samples presented in Table (4) and Fig (4).

From Table (4) it could be noticed that American wheat red flour contained high gluten. Reduction this value was noticed in both white flour and Turkey wheat flour where the value decreased. This decrease may be due to the milling process causes the loss in protein depends not only on the extract of milling process, but also on the variety of the wheat being milled, similar observation were reported by **(Pomeranz 1988).**

It is worthy to mention that, wet gluten is positively related to the water quantity bended. Where as **{ Peter, (2002), and Bot and Bruijne (2003)**} this is very important phenomena in determined the reheological properties of the dough and certainly might affect the baking quality of the processed bread. The dry gluten content in the test samples of American red flour, American white flour and Turkey flour 8.076, 6.63 and 6.43 respectively, The reduction in the dry gluten content, than the total protein content, in all investigated samples could be explained by

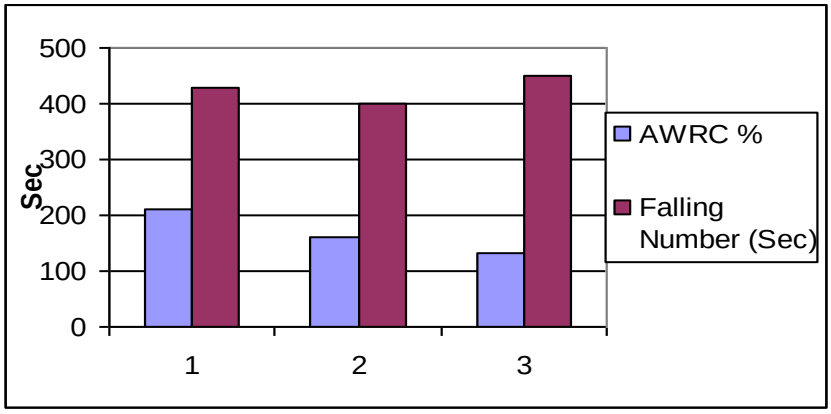
the explanation given by **Doguchi and Hlynka (1967)** who reported that dry gluten is not a pure protein and that it contains more than 86.0% true protein, the remainder being starch. Fiber, fat,……ect. However, **Greenway and Watson (1975)** have ealier reported that gluten of hard red winter wheat flour contained 82.0% protein, 0.08% lipids, 0.49% ash and 6.36% carbohydrates. Regarding to the same table, the ability of gluten to bind water gluten absorption (AWRC) Alkaline water retention capacity was quite high for American red flour (211.45%), but quite lower for American white flour (159.65%) and Turkey flour 133.35%. Gluten index (gluten quality) was higher for American Red flour (94.93%) but gave the lowest values in American white flour (85.63% and 84.4%) respectively. Also, from the results found in the same Table (4), it is noted that falling number of American Red flour was 427 second. While American White flour and Turkey flour were 400 and 450 second respectively. These results agree with that obtained by **Hlynka, (1971) and His and Yilli, (1996)** who found falling number of wheat flour ranged between 293 to 430 second.

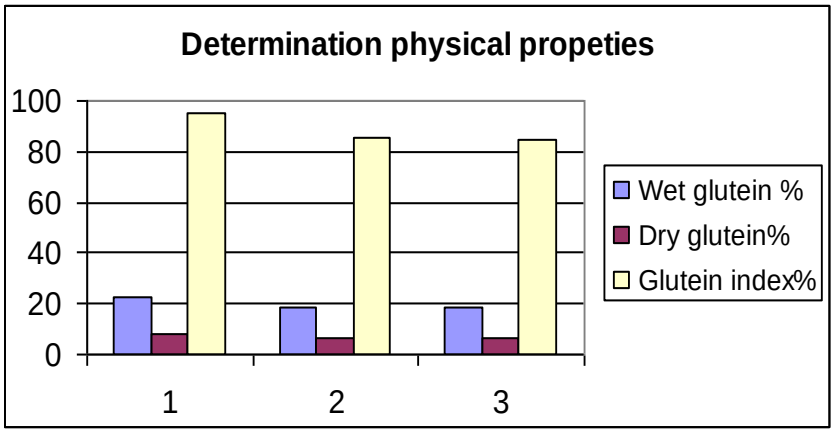
It could be concluded that the hard red flour sample showed the highest percentage of protein content, also gave the highest percentage of wet, dry gluten, gluten absorption and gluten index followed by soft white flour and followed by Turkey flour. There fore, it would be expected that such flour red and white would give the best rheological properties and better baking properties for pan bread.

Table (4): Determination physical properties of American wheat (Red & White flours) and Turkey flour.

properties	American red flour	American white flour	Turkey flour
Falling number (Sec)	427	400	450
Wet gluten %	22.712	18.943	18.896
Dry gluten %	8.076	6.63	6.43
Gluten index %	94.93	85.63	84.4
AWRC %	211.45	159.65	133.35

AWRC = Alkaline water retention capacity





1 = American Wheat Red Flour.

2 = American Wheat White Flour.

3 = Turkey Wheat Flour.

AWRC = Alkaline Water Retention Capacity.

Fig (4): Determination physical properties of American wheat (Red & White) and Turkey flours.

3. Pan Bread.

3.1 Effect of adding 30 ppm Ascorbic Acid, 0.5% GMS and 0.5% Malt flour on physical properties and sensory characteristics of pan bread.

3.1.1 Effect of adding Ascorbic Acid, GMS and Malt flour on physical properties of pan bread.

The presented results in Table (5), showed the effect of adding Ascorbic acid, GMS and Malt flour to wheat flour without Ascorbic acid and with Ascorbic acid on hard wheat red and different levels with white wheat flour with different levels. Also it could be noticed that such addition increased all tested physical properties of pan bread gave high values for volume and specific volume. These above obtained results are confirming those obtained by **His and Yilli (1996) and Lu, and Seib (1998)** who found that addition of dehydro ascorbic acid (DHAA) to wheat flour produced a higher bread volume and specific volume. Also, from the same table, the results showed the effect of adding GMS to wheat flour without GMS and With GMS on hard wheat red and white flour with different levels of its. Its could noticed that any addition increased physical properties and gave high volumes for pan bread. These results were agreement with those obtained by **Xu et al (1992)** who found the loaf volume increased greatly by addition 0.5% (GMS).

Also, from the same Table, the addition Malt flour lead to increase the volume of pan bread and the increase was simple and near the control without malt flour this

may be due to ∝-amylase level is to low and activity A-amylase.

From the above mentioned results, it could be observed that, the addition of Ascorbic Acid, GMS and Malt flour give high volume with 100% American Red wheat (hard) compare to the blend samples.

Table (5): Effect of adding 30 ppm Ascorbic acid, 0.5% GMS and 0.5% Malt flour on the physical properties of pan bread.

Additives %		Weight gm	Volume Cm^3	Specific volume Cm^3/gm
Control	1	300.75	700	2.33
	2	296.35	674	2.27
	3	298.46	650	2.17
	4	284.16	505	1.78
	5	283.52	470	1.66
Ascorbic acid 30 ppm	6	303.67	820	2.72
	7	291.98	765	2.62
	8	293.33	740	2.52
	9	295.35	605	2.05
	10	285.94	570	1.99
GMS 0.5%	11	298.5	780	2.7
	12	294.5	720	2.44
	13	290.91	690	2.37
	14	282.98	575	2.03
	15	290.35	500	1.72
Malt 0.5%	16	298.04	705	2.37
	17	295.23	700	2.37
	18	291.0	635	2.18
	19	276.79	515	1.86
	20	280.09	480	1.71

1 = 100% A.W.R.F

2 = 75% A.W.R.F + 25% A.W.W.F

3 = 50% A.W.R.F+ 50% A.W.W.F

4 = 25% A.W.R.F + 75% A.W.W.F

5 = 100% A.W.W.F

6 = 100% A.W.R.F

7 = 75% A.W.R.F+ 25% A.W.W.F

8 = 50% A.W.R.F + 50% A.W.W.F

9 = 25% A.W.R.F + 75% A.W.W.F

10 = 100% A.W.W.F

11 = 100% A.W.W.F

12 = 75% A.W.R.F + 25% A.W.W.F

13 = 50% A.W.R.F + 50% A.W.W.F

14 = 25% A.W.R.F+ 75% A.W.W.F

15 = 100% A.W.W.F

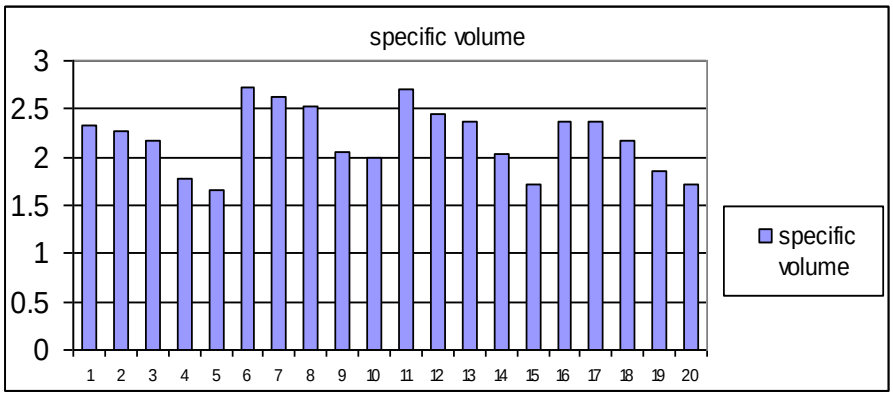
16 = 100% A.W.W.F

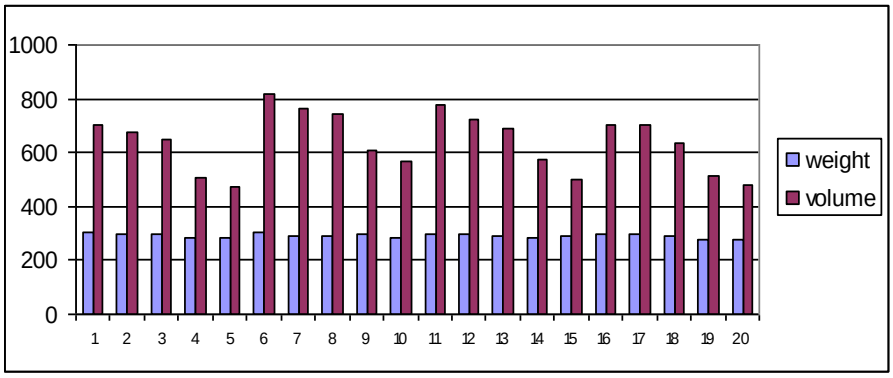
17 = 75% A.W.R.F + 25% A.W.W.F

18 = 50% A.W.R.F + 50% A.W.W.F

19 = 25% A.W.R.F + 75% A.W.W.F

20 = 100% A.W.W.F





1 = 100% A.W.R.F

2 = 75% A.W.R.F + 25% A.W.W.F

3 = 50% A.W.R.F+ 50% A.W.W.F

4 = 25% A.W.R.F + 75% A.W.W.F

5 = 100% A.W.W.F

6 = 100% A.W.R.F

7 = 75% A.W.R.F+ 25% A.W.W.F

8 = 50% A.W.R.F + 50% A.W.W.F

9 = 25% A.W.R.F + 75% A.W.W.F

10 = 100% A.W.W.F

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12 = 75% A.W.R.F + 25% A.W.W.F

13 = 50% A.W.R.F + 50% A.W.W.F

14 = 25% A.W.R.F+ 75% A.W.W.F

15 = 100% A.W.W.F

16 = 100% A.W.W.F

17 = 75% A.W.R.F + 25% A.W.W.F

18 = 50% A.W.R.F + 50% A.W.W.F

19 = 25% A.W.R.F + 75% A.W.W.F

20 = 100% A.W.W.F

Fig (5): Effect of adding 30 ppm Ascorbic acid, 0.5% GMS and 0.5% Malt flour on the physical properties of pan bread.

3.1.2 Effect of Ascorbic Acid, GMS and Malt flour on the sensory characteristics of pan bread.

From results presented in Table (6) it could be noticed that added 30 ppm Ascorbic Acid to wheat flour hard (red) and soft white flour and different levels of it's for produce pan bread.

Concerning the statistical analysis indicated that significant difference was observed between the control without addition and all treatments in sensory evaluation and samples with ascorbic acid GMS and Malt flour. Pan bread with additions gave very good and had high score in over all acceptability and all the evaluated characteristics nearly.

These results are in agreement with those of **His and Yitii (1996) & Xiuzhen and Sied (1998)** who found that pan bread improve the crumb Texture, crust color and appearance.

From above results, it could be recommended that using of (30 ppm) Ascorbic Acid, (0.5%) GMS and (0.5%) Malt flour to produce very good pan bread and also, American wheat hard red flour.

Table (6): Sensory evaluation of pan bread produced from Red and White flours different levels of them and adding (ascorbic acid, GMS and Malt)

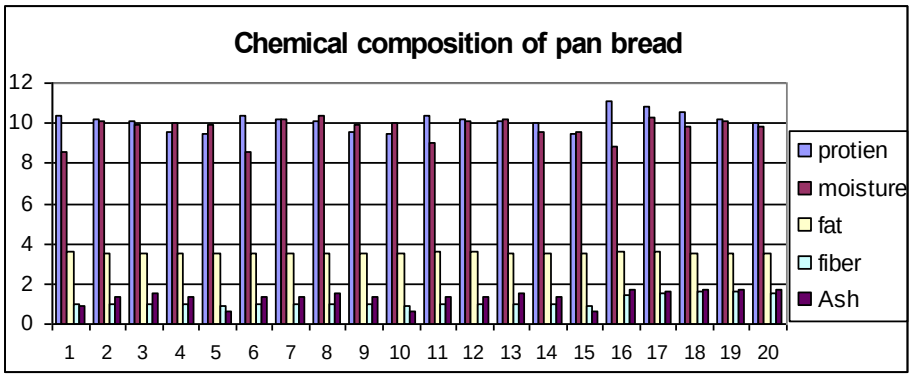
3.2 Effect of adding American wheat red flour and American wheat white flour alone or different levels of it's with 30 ppm A.A, 0.5% GMS and 0.5% Malt flour on chemical composition of pan bread.

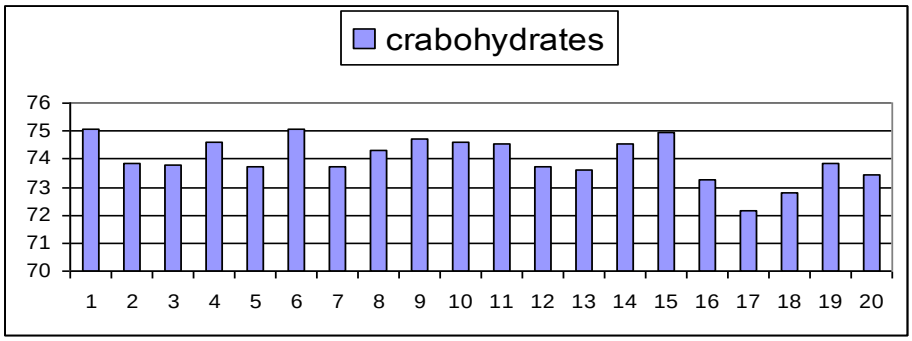
The chemical composition of pan bread as in fluency by different levels of flours with A.A, GMS and Malt flour was studied and the obtained results are shown in Table (7).

It could be noticed that, protein content and fiber were slightly decreased in the pan bread was produced, while fat (ether extract) and carbohydrates increased with increasing the different levels of American wheat soft white flour and adding GMS and Malt flour. These results are confirmed by those obtained by **Mathewson (1998).**

Table (7): **Effect of adding American wheat red flour and American wheat white flour alone or different levels of it's with 30 ppm A.A, 0.5% GMS and 0.5% Malt flour on chemical composition of pan bread.**

Properties		Moisture (%)	Protein (%)	Fiber (%)	Ash (%)	Fat (%)	Carbohydrates* (%)
CONTROL	100%A.W.R.F	8.6	10.39	1.02	0.91	3.59	75.08
	75%A.W.R.F+ 25% A.W.W.F	10.1	10.216	1.00	1.34	3.51	73.834
	50%A.W.R.F+ 50% A.W.W.F	9.9	10.124	0.99	1.5	3.52	73.667
	25%A.W.R.F+ 75% A.W.W.F	10.0	9.57	0.98	1.37	3.50	74.57
	100%A.W.WF	9.9	9.45	0.88	0.59	3.51	73.70
30 ppm A.A	100%A.W.R.F	8.6	10.39	1.02	1.39	3.5	75.09
	75%A.W.R.F+ 25% A.W.H.F	10.2	10.216	1.00	1.31	3.52	73.754
	50%A.W.R.F+ 50% A.W.W.F	10.4	10.124	0.99	1.53	3.52	74.337
	25%A.W.R.F+ 75% A.W.W.F	9.9	9.57	0.98	1.36	3.5	74.69
	100%A.W.WF	10.0	9.45	0.88	0.59	3.48	74.60
0.5% GMS	100%A.W.R.F	9	10.39	1.02	1.38	3.65	74.56
	75%A.W.R.F+ 25% A.W.W.F	10.1	10.216	1.00	1.33	3.63	73.724
	50%A.W.R.F+ 50% A.W.W.F	10.2	10.124	0.99	1.55	3.53	73.606
	25%A.W.R.F+ 75% A.W.W.F	9.57	10.0	0.98	1.39	3.53	74.53
	100%A.W.WF	9.6	9.45	0.88	0.59	3.54	74.98
0.5% Malt	100%A.W.R.F	8.8	11.127	1.46	1.7	3.65	73.263
	75%A.W.R.F+ 25% A.W.W.F	10.3	10.869	1.49	1.58	3.63	72.131
	50%A.W.R.F+ 50% A.W.W.F	9.8	10.561	1.6	1.74	3.53	72.769
	25%A.W.R.F+ 75% A.W.W.F	10.1	10.19	1.62	1.72	3.53	73.84
	100%A.W.WF	9.8	9.98	1.5	1.69	3.5	73.93





1 = 100% American Wheat Red (hard) flour

2 = 75% American Wheat Red (hard) flour + 25% American soft Wheat (White) flour

3 = 50% American Wheat Red (hard) flour + 50% American soft Wheat (White) flour

4 = 25% American Wheat Red (hard) flour + 75% American soft Wheat (White) flour

5 = 100% American soft Wheat (White) flour

6 = 100% American Wheat Red (hard) flour

7 = 75% American Wheat Red (hard) flour + 25% American soft Wheat (White) flour

8 = 50% American Wheat Red (hard) flour + 50% American soft Wheat (White) flour

9 = 25% American Wheat Red (hard) flour + 75% American soft Wheat (White) flour

10 = 100% American soft Wheat (White) flour

11 = 100% American Wheat Red (hard) flour

12 = 75% American Wheat Red (hard) flour + 25% American soft Wheat (White) flour

13 = 50% American Wheat Red (hard) flour + 50% American soft Wheat (White) flour

14 = 25% American Wheat Red (hard) flour + 75% American soft Wheat (White) flour

15 = 100% American soft Wheat (White) flour

16 = 100% American Wheat Red (hard) flour

17 = 75% American hard Wheat (Red) flour + 25% American soft Wheat (White) flour

18 = 50% American Wheat Red (hard) flour + 50% American soft Wheat (White) flour

19 = 25% American Wheat Red (hard) flour + 75% American soft Wheat (White) flour

20 = 100% American soft Wheat (White) flour

Fig (6): Chemical composition of pan bread.

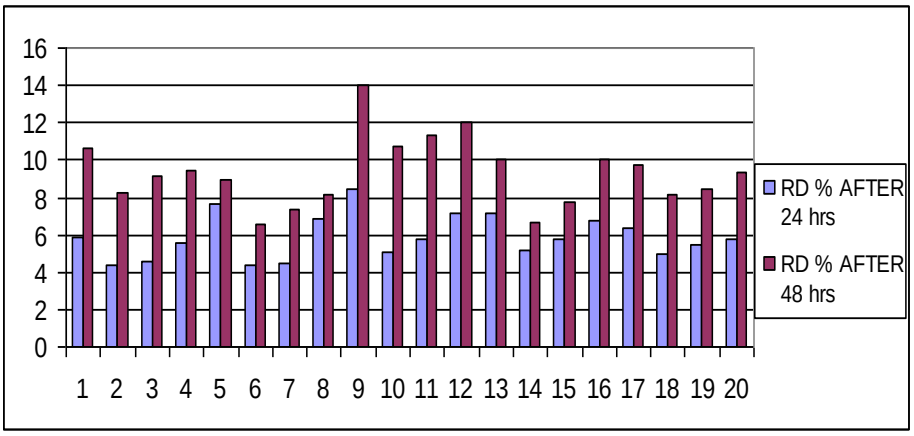
3.3 Effect of adding different levels of American wheat (Red and White) flour on alkaline water retention capacity (AWRC).

Alkaline water retention capacity (AWRC) of different levels prepared pan bread are presented in Table (8) and illustrated in figures (7). AWRC % was determined at different storage times during zero, 24 hrs, and 48hrs for pan bread stored in polyethylene bags at 24^0C. It could be noticed that the rate of AWRC was decreased with increasing the different levels of American wheat white flour. While, adding ascorbic acid, GMS and malt flour lead to increase (AWRC %) in all treatments. While, the rate of decrease percentage R.D % was decreased. This may be due to crystallization of amylase after baking process during bread storage. The results confirmed with those of **stauffer, (2000)** who reported that bread staling related to recrystallization (retrogradation) of starch molecules gelatinized during the baking process.

From same table, it could be noticed that rate of decrease increase with adding ascorbic acid followed by GMS and Malt flour. The effect of glycerol mono stearate (GMS) can be demonstrated by the change in hydration capacity of crumb during storage. These results also confirmed

those obtained by **Abd El-Lateef and Attia Afaf (1995).**

Table (8): Effect of adding different levels of American wheat (Red & White) flours on alkaline water retention capacity (AWRC) of stored pan bread supplemented with Ascorbic acid, GMS and Malt flour.



1 = 100% American hard Wheat (Red)

2 = 75% American hard Wheat (Red) + 25% American soft Wheat (White)

3 = 50% American hard Wheat (Red) + 50% American soft Wheat (White)

4 = 25% American hard Wheat (Red) + 75% American soft Wheat (White)

5 = 100% American soft Wheat (White)

6 = 100% American hard Wheat (Red)+ A.A

7 = 75% American hard Wheat (Red) + 25% American soft Wheat (White)+ AA

8 = 50% American hard Wheat (Red) + 50% American soft Wheat (White)+ AA

9 = 25% American hard Wheat (Red) + 75% American soft Wheat (White)+ AA

10 = 100% American soft Wheat (White) + AA

11 = 100% American hard Wheat (Red) + GMS

12 = 75% American hard Wheat (Red) + 25% American soft Wheat (White)+ GMS

13 = 50% American hard Wheat (Red) + 50% American soft Wheat (White)+ GMS

14 = 25% American hard Wheat (Red) + 75% American soft Wheat (White)+ GMS

15 = 100% American soft Wheat (White)+ GMS

16 = 100% American hard Wheat (Red)+Malt

17 = 75% American hard Wheat (Red) + 25% American soft Wheat (White)+ Malt

18 = 50% American hard Wheat (Red) + 50% American soft Wheat (White)+ Malt

19 = 25% American hard Wheat (Red) + 75% American soft Wheat (White)+ Malt

20 = 100% American soft Wheat (White)+ Malt

Fig(7): Effect of adding different levels of American wheat (Red & White) flours on alkaline water retention capacity (AWRC) of stored pan bread supplemented with Ascorbic acid, GMS and Malt flour.

3.4 Effect of adding 30 ppm Ascorbic acid, 0.5% GMS and 0.5 Malt flour to wheat flours on the rheological properties of doughs.

From the rheological properties obtained results of physical and sensory for pan bread lead to the best pan bread were 100% A.W.R.F + A.A, 75% A.W.R.F + 25% A.W.W.F + 0.5% GMS, 75% A.W.R.F + 25% A.W.W.F + 0.5% Malt. The results were illustrated in Table (9) and Figures (8). Results presented in Table (9) and Figures (8) show the effect of 30 ppm Ascorbic Acid, 0.5% GMS and 0.5% Malt flour addition to wheat flour on farinograph reading from these results, it could be noticed that the water absorption of dough decreased graduly from 56.2 to 56.0 and 54.4 with adding 30 ppm A.A, 0.5% GMS and 0.5% Malt flour. **Roussel (1985)** reported that increasing of water absorption might be caused by the strong water binding ability of Ascorbic Acid. Also, dough development time increased with increased the added 30 ppm of Ascorbic Acid with wheat flour.

Concerning dough stability, it was 1.5 min with adding 30 ppm Ascorbic Acid and 0.5% GMS. While adding 0.5% Malt flour the stability decrease to 1.0 min.

Weakening of dough was 60 B.U with Ascorbic Acid. This may be due to that Ascorbic Acid play an important role in the rheogical properties as improver. That improvement function of O_2 radial, which produced affect the intermolecular SH-SS interchange reaction between proteins molecules in dough resulting in the formation of three dimensional

networks. These results in the same line with **Nakamura and Kurata (1997).** .

Results present in Table (10) and Figure (9) show the effect of Ascorbic Acid addition to 72% wheat flours on Extensograph reading. From these result, it could be observed that resistance to extension ® of doughs with adding Ascorbic Acid was 980 B.U.

These results confirmed with those obtained by **Boyacioghu and D'appolonia (1994)** who found that the resistance to extension ® increasing with addition of Ascorbic Acid to wheat flour. Concerning the extensibility (E) for test flour was 90 m.m with added Ascorbic Acid. ..

The same investigation reported that propertied that propertonal number (R/E) of doughs was highly 10.8 with adding Ascorbic Acid to wheat flour.

Energy values of test dough's were highly 117 cm2 with adding 30 ppm Ascorbic Acid.

Table (9): Farinogram papameters of pan bread from American wheat red flour and American wheat white flour with 30 ppm Ascorbic Acid, 0.5% GMS and 0.5% Malt flour.

Sample	Water Absorption %	Development Time (min)	Stability Time (min)	Dough Weakening (BU)
100% AWRF+ 30 ppm A.A	56.2	2.0	1.5	60
75%AWRF + 25%AWHF + 0.5%GMS	56	2.0	1.5	65
75% AWRF + 25%AWHF + 0.5%Malt	54.4	1.5	1.0	85

AWRF = American Wheat Red Flour

AWHF = American Wheat Red Flour

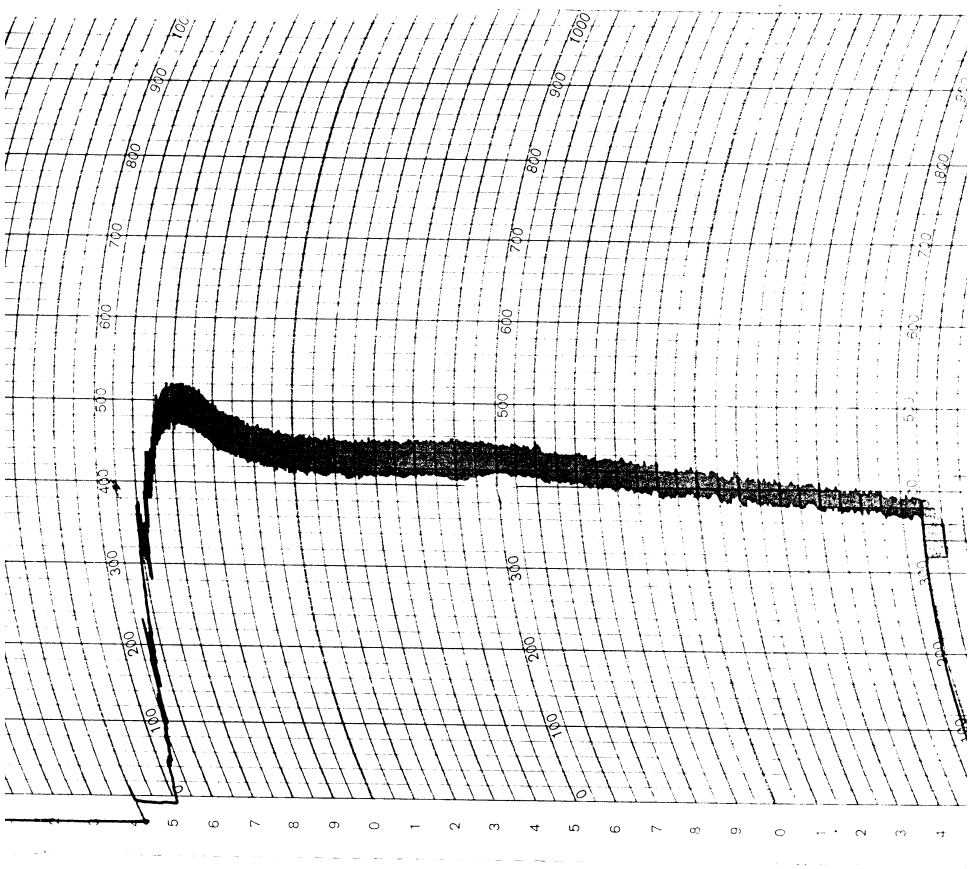


Fig (8-1): Farinograph parameterers of pan bread dough with 30 ppm Ascorbic Acid

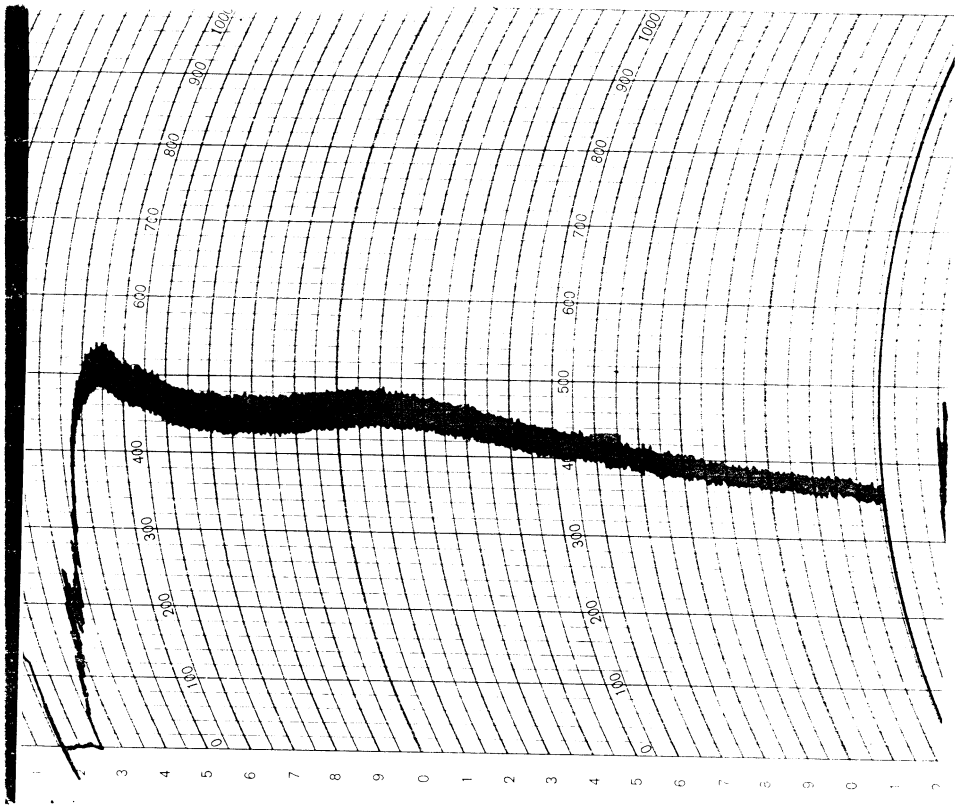


Fig (8-2): Farinograph parameterers of pan bread dough with 0.5% GMS.

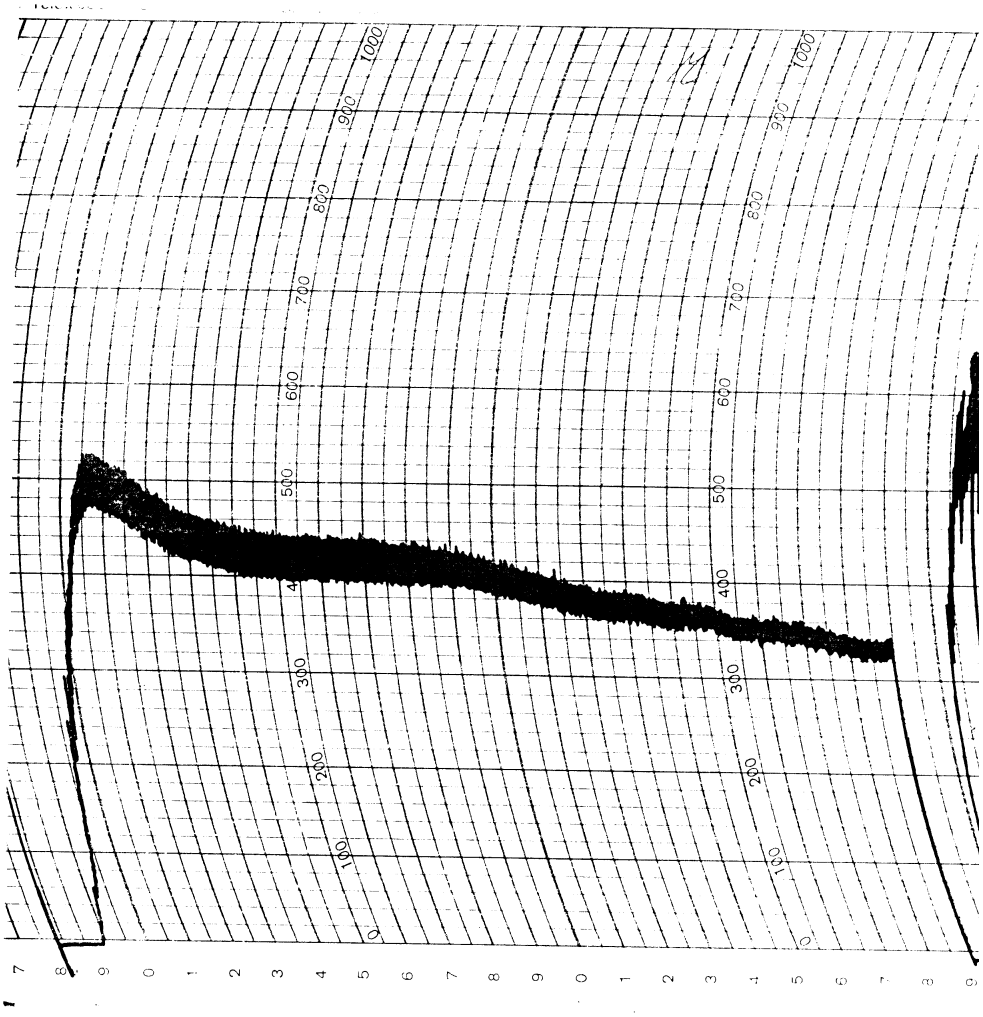


Fig (8-3): Farinograph parameterers of pan bread dough with 0.5% Malt flour.

Table (10): Extensogram papameters of pan bread from American wheat red flour and American wheat white flour with 30 ppm Ascorbic Acid, 0.5% GMS and 0.5% Malt flour.

Sample	Resistance to extension (R) B.U	Extensibility (E) mm	Proportional Number (R/E)	Energy (Cm^2)
100% AWRF + 30 ppm A.A	980	90	10.89	117
75% AWRF + 25%AWHF + 0.5% GMS	980	92	10.65	117
75% AWRF + 25%AWHF + 0.5% Malt	960	102	9.53	107

AWRF = American Wheat (Red)

AWHF = American Wheat (white)

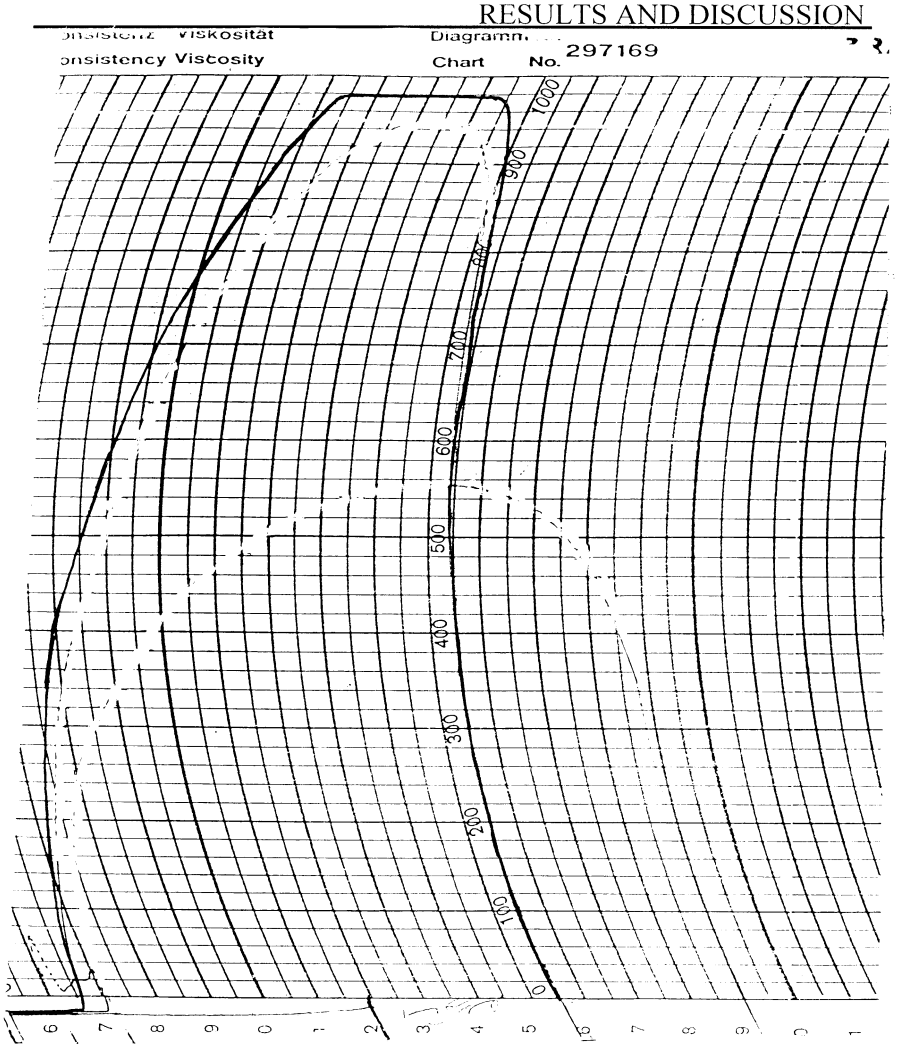


Fig (9-1): Extensograph parameterers of pan bread dough with 30 ppm Ascorbic Acid

Fig (9-2): Extensograph parameterers of pan bread dough with 0.5% GMS.

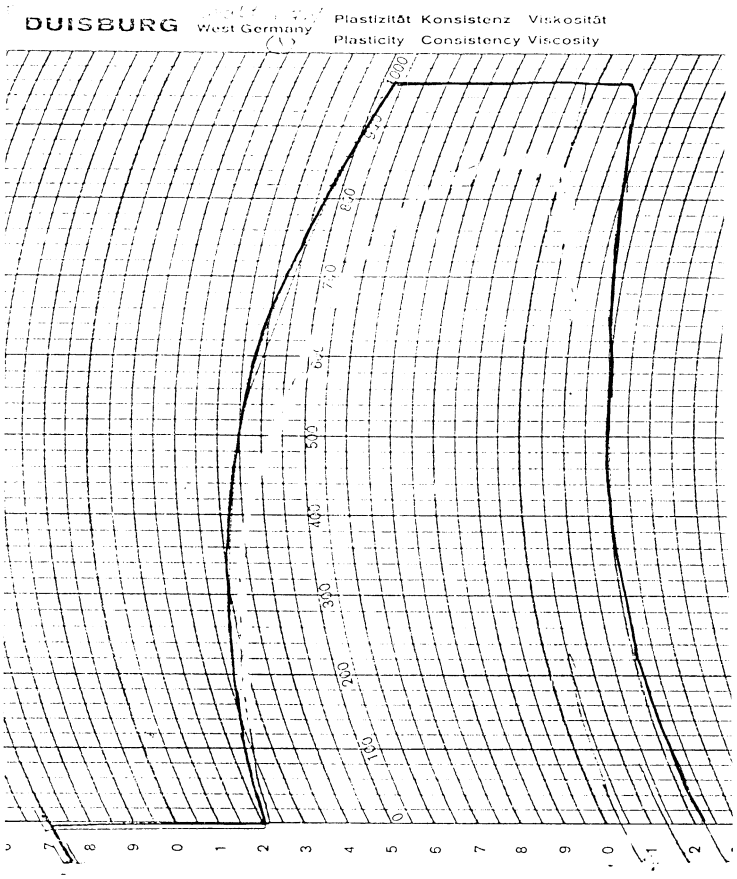


Fig (9-3): Extensograph parameterers of pan bread with 0.5% Malt Flour.

4. Cakes

4.1 Effect of adding different levels of soft white flour and Turkey flour on sensory evaluation.

The sensory characteristics, i. e. cells (uniformity, size of cells, thickness of walls) grain texture (moistess, tenderness, softness), crumb color, taste and flavor of cakes prepared from different levels of American soft white flour and Turkey flour were evaluated by ten panelists and the data obtained were statistically analyzed as shown in Table (11) .

From the results presented in Table (11) it could be noticed that 100% American soft white wheat flour produce cake Questionable for all the evaluated characteristics while decrease the percentage of A.W.W.F and increase the percentage of Turkey wheat flour (T.W.F) lead to produce cakes good for all the evaluated characteristics. This may be due to the (T.W.F) considered weaking than American white wheat flour. These results are confirmed by **Tyler (1973).**

Concerning the statistical analysis indicated that significant difference was observed between American soft white wheat flour and Turkey wheat flour.

Table (11):Sencory evaluation of cakes produced from different levels of soft white flour and Turkey flour.

4.2 Effect of adding different levels of A.W.W.F and T.W.F on sensory evaluation with 0.5% GMS and 0.5% Malt flour.

Data recorded in Table (12) represent the changes in sensory evaluation by using different levels of A.W.F and T.W.F with 0.5% glyceride mono stearate and 0.5% of Malt flour. From the results it could be observed that with increasing the levels of Turkey wheat flour the sensory characterstistice of cakes increased 100%. Turkey wheat flour was the best for cake from 0.5% GMS flowed by cake 25% A.W.W.F + 75% T.W.F and followed by 50% A.W.W.F + 50% T.W.F and followed by 25% A.W.W.F + 75% T.W.F and the last one was 100% A.W.W.F and had lowest scores. Also, 0.5% Malt flour gave the same effect but was low than the emulsifier. .

However, the results in the same Table (12) revealed that all bends had good scores. These results are in agreement with those of **Abd El-Latef and Attia (1995) and El- Hofi (1995).**

Table(12): Sensory evaluation of cakes produced from different levels of American soft white flour and Turkey flour with 0.5% GMS and 0.5% Malt flour.

4.3 Chemical composition of cakes produced from American soft white flour and Turkey flour with different levels of it's and 0.5% GMS and 0.5% Malt flour.

The change in the chemical composition of cakes were influenced by adding Turkey flour and American soft white flour with different levels of it's and 0.5% GMS and 0.5% Malt flour.

From the results presented in Table (13) it could be noticed that the protein content, fiber, ash and fat were increased with increased the levels of T.W.F, While total carbohydrates was decreased these obtained results agreed with that reported by **Abd El-Lateef and Attia (1995)**. These may be due to the high protein gave when adding 0.5% for GMS.

The best results were with adding 100% Turkey flour with 0.5% Malt flour.

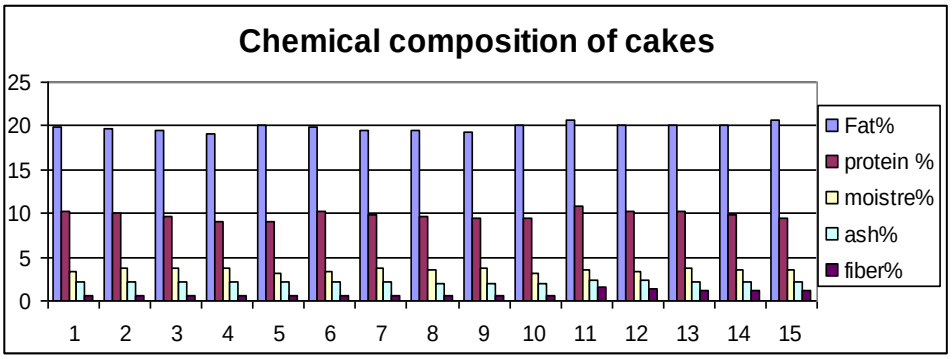
Table (13): Chemical composition of cakes produced from Turkey wheat flour and American wheat white flour with 0.5%GMS and 0.5%Malt flour (on dry basis).

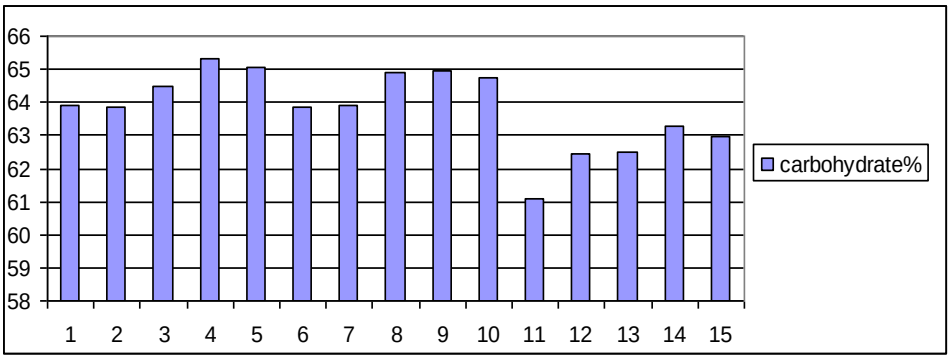
	properties	Moisture (%)	Protein (%)	Fiber (%)	Ash (%)	Fat (%)	Carbohy-drates*
CONTROL	100%A.W.WF	3.26	10.2	0.61	2.2	19.8	63.93
	25% T.W.F + 75% A.W.W.F	3.7	9.95	0.65	2.2	19.65	63.85
	50% T.W.F + 50% A.W.W.F	3.7	9.56	0.62	2.09	19.57	64.46
	75% T.W.F + 25% A.W.W.F	3.7	9.07	0.6	2.2	19.09	65.34
	100% T.W.F	3.2	9.00	0.61	2.1	20.03	65.06
0.5% GMS	100%A.W.WF	3.3	10.2	0.65	2.18	19.8	63.87
	75% A.W.W.F +25% T.W.F	3.8	9.9	0.65	2.2	19.53	63.92
	50%A.W.W.F +50% T.W.F	3.5	9.56	0.62	2.0	19.43	64.89
	75% T.W.F + 25% A.W.W.F	3.8	9.52	0.60	1.9	19.22	64.96
	100% T.W.F	3.2	9.4	0.61	2.0	20.06	64.73
0.5% Malt	100%A.W.WF	3.6	10.9	1.5	2.31	20.6	61.09
	75%A.W.W.F +25% T.W.F	3.4	10.32	1.4	2.3	20.11	62.47
	50% A.W.W.F +50% T.W.F	3.8	10.2	1.22	2.23	20.04	62.51
	25%A.W.W.F +75% T.W.F	3.5	9.88	1.14	2.2	20.00	63.28
	100% T.W.F	3.6	9.47	1.1	2.19	20.68	62.96

A.W.W.F = American Wheat White Flour.

T.W.F = Turkey Wheat Flour.

GMS = Glycerol Mono Stearate.





1 = 100% American white wheat flour

2 = 75% American white wheat flour + 25% Turkey wheat flour

3 = 50% American white wheat flour + 50% Turkey wheat flour

4 = 25% American white wheat flour + 75% Turkey wheat flour

5 = 100% Turkey wheat flour

6 = 100% American white wheat flour + 0.5% GMS

7 = 75% American white wheat flour + 25% Turkey wheat flour + 0.5% GMS

8 = 50% American white wheat flour + 50% Turkey wheat flour + 0.5% GMS

9 = 25% American white wheat flour + 75% Turkey wheat flour + 0.5% GMS

10 = 100% Turkey wheat flour+ 0.5% GMS

11 = 100% American white wheat flour + 0.5% Malt

12 = 75% American white wheat flour + 25% Turkey wheat flour + 0.5% Malt

13 = 50% American white wheat flour + 50% Turkey wheat flour + 0.5% Malt

14 = 25% American white wheat flour + 75% Turkey wheat flour + 0.5% Malt

15 = 100% Turkey wheat flour + 0.5% Malt

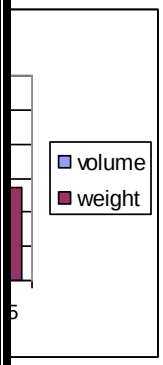
Fig (10): Chemical composition of cakes produced from Turkey wheat flour and American wheat white flour with 0.5%GMS and 0.5% Malt.

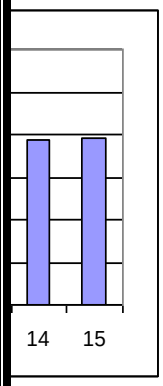
4.4 Effect of adding 0.5% GMS and 0.5% Malt flour on physical properties on cakes.

The results in Table (14), shows the effect of adding 0.5% GMS and 0.5% Malt flour and without GMS and Malt flour on American soft white wheat flour and different levels from Turkey wheat flour with different level also. It could be observed that white wheat flour gave lower value in weight volume and specific volume for cakes. While Turkey wheat flour gave higher values. This may be noticed that any addition of Turkey wheat flour increased physical properties and gave high value. Also, addition 0.5% GMS increased the volume and specific volume high increased than the control while addition 0.5% malt flour increased the weight and specific volume . The increase was simple and near the control. These results were agreement with those obtained by **Abd El-Lateef and Attia (1995)**, who reported that the effect of GMS can be increased than control.

Table (14): Physical properties of cakes produced from different levels of American white flour and Turkey flour with 0.5% malt flour and 0.5% GMS.

Properties		Weight gm	Volume Cm^3	Specific Volume Cm^3/gm
Control	100% A.W.H.F	39.3	59	1.501
	75% A.W.H.F + 25% T.W.F	40.09	67	1.67
	50% A.W.H.F + 50% T.W.F	41.29	70	1.70
	25% A.W.H.F + 75% T.W.F	43.02	79	1.836
	100% T.W.F	50.9	99	1.945
0.5% GMS	100% A.W.H.F	39.19	79.5	2.029
	75% A.W.H.F + 25% T.W.F	39.98	88.7	2.219
	50% A.W.H.F + 50% T.W.F	40.56	101.5	2.502
	25% A.W.H.F + 75% T.W.F	41.86	106.0	2.532
	100% T.W.F	41.9	109.3	2.609
0.5% Malt	100% A.W.H.F	40.94	66	1.612
	75% A.W.H .F+ 25% T.W.F	46.65	86.6	1.856
	50% A.W.H.F + 50% T.W.F	53.12	100.5	1.891
	25% A.W.H.F + 75% T.W.F	54.45	105.0	1.928
	100% T.W.F	54.65	108.97	1.950





1 = 100% American white wheat flour

2 = 75% American white wheat flour + 25% Turkey wheat flour

3 = 50% American white wheat flour + 50% Turkey wheat flour

4 = 25% American white wheat flour + 75% Turkey wheat flour

5 = 100% Turkey wheat flour

6 = 100% American white wheat flour + 0.5% GMS

7 = 75% American white wheat flour + 25% Turkey wheat flour + 0.5% GMS

8 = 50% American white wheat flour + 50% Turkey wheat flour + 0.5% GMS

9 = 25% American white wheat flour + 75% Turkey wheat flour + 0.5% GMS

10 = 100% Turkey wheat flour+ 0.5% GMS

11 = 100% American white wheat flour + 0.5% Malt

12 = 75% American white wheat flour + 25% Turkey wheat flour + 0.5% Malt

13 = 50% American white wheat flour + 50% Turkey wheat flour + 0.5% Malt

14 = 25% American white wheat flour + 75% Turkey wheat flour + 0.5% Malt

15 = 100% Turkey wheat flour + 0.5% Malt

Fig (11): Physical properties of cakes produced from different levels of American white flour and Turkey flour with 0.5% malt flour and 0.5% GMS

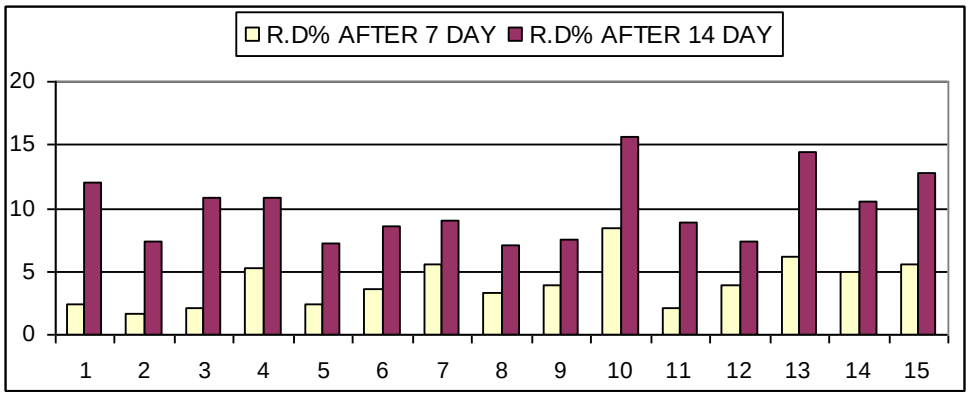
4.5 Effect of adding 0.5% Malt flour and 0.5% GMS to American wheat white flour and Turkey flour with different levels of its on alkaline water capacity (A.W.R.C) of cakes storage.

The effect of addition of 0.5% GMS and 0.5% Malt flour to wheat and different levels of its on (AWRC) are shown in Table (15) and Fig (12). The results indicated that the swelling power of control (white flour) was decreased by increasing the period of cake storage. Also, the addition of 0.5% GMS lead to low decrease in rate of decreasing of AWRC in cakes after storing for 7 days and 14 days sat room temperature.

These results are in agreement with **Eliasson and larsson (1993)** who reported that, in the case of cake excellent shelf life was produced by using 0.5% of (GMS). This may be due to that emulsifiers and hydrocolloid which can be combined in baking improver, contribution to optimum functional properties of cake. Also, the results are confirmed with those of **Larsson (1993)** who adding malt flour which contains amylases to hydrolyze starch during fermentation, the excessive use malt flour lead to the loss of dough stability, they may be retard the retrogradation of starch in cake.

These results agreed with **Hung-Iten et al (1999)** who studied the starch microstructure of fresh and staled cake crumb using light microscopy.

Table (15): Effect of adding 0.5% GMS and 0.5% Malt flour to wheat flours American white and Turkey with different levels of Its on alkaline water capacity (AWRC%) of cakes storage (on dry weigh basis)



1 = 100% American white wheat flour

2 = 100% American white wheat flour + 0.5% GMS

3 = 100% American white wheat flour + 0.5% Malt

4 = 75% American white wheat flour + 25% Turkey wheat flour

5 = 75% American white wheat flour + 25% Turkey wheat flour + 0.5% GMS

6 = 75% American white wheat flour + 25% Turkey wheat flour + 0.5% Malt

7 = 50% American white wheat flour + 50% Turkey wheat flour

8 = 50% American white wheat flour + 50% Turkey wheat flour + 0.5% GMS

9 = 50% American white wheat flour + 50% Turkey wheat flour + 0.5% Malt

10 = 25% American white wheat flour + 75% Turkey wheat flour

11 = 25% American white wheat flour + 75% Turkey wheat flour + 0.5% GMS

12 = 25% American white wheat flour + 75% Turkey wheat flour + 0.5% Malt

13 = 100% Turkey wheat flour

14 = 100% Turkey wheat flour+ 0.5% GMS

15 = 100% Turkey wheat flour + 0.5% Malt

Fig (12): Effect of adding 0.5% GMS and 0.5% Malt flour to American wheat white flour and Turkey flour with different levels of its on alkaline water capacity (AWRC %) of cakes storage (on dry weigh basis).

4.6 Effect of Rheological properties of best doughs to produce cakes.

From the results, the best treatments were 100% T.W.F and 75% A.W.W.F + 25% T.W.F with 0.5% GMS and 0.5% Malt flour respectively.

Farinogram parameters in Table (16) and Fig (13) show the effect of 0.5% GMS and 0.5% Malt flour on water absorption of dough (%), development time (min), stability time (min) and dough weakening (B.U). from these results it could be noticed the water absorption and Stability time increased 57.1% and 3.5 (min) respectively, While development time and dough weakening (B.U) decreased 2.0 (min) and 55 (B.U) respectively in 100% Turkey Wheat Flour. While 25% Turkey Wheat Flour + 75% American Wheat White Flour water absorption and stability time decreased 53.8% and 3.0% respectively. While development time and dough weakening increased 2.0 (min) and 115(B.U) respectively.

Extensogram parameters of cakes in Table (17) from wheat flour doughs with T.W.F decreased in 100% T.W.F Extensibility (m.m) and Proportional number (R/E) 116 and 4.37 respectively, while it increased in Resistance to extension and Energy (cm^2) 520 (B.U) and 83.4 (cm^2) respectively. when used 75% A.W.H.F + 25% T.W.F + 0.5% malt flour increased Extensibility to 145 and Resistance to extension to 570, while Proportional number (R/E) decreased to 3.69, and Energy (cm^2) decreased 74.6(cm^2).

When proportional number decreased this may return to breakdown the gluten net work and dough weakening and this improved the cake produce. These results are in agreement with those reported by **Doweidar, (2002).**

Table (16): Farinogram parameters of cakes from American wheat white flour and Turkey flour with GMS and Malt flour.

Samples	Water Absorption %	Development Time (min)	Stability Time (min)	Dough Weakening (BU)
100% TWF + 0.5% GMS	57.1	2.0	3.5	55
25% AWWF + 75% TWF + 0.5% Malt	53.8	2.0	3.0	115

A.W.W.F = American wheat white flour.

T.W.F = Turkey Wheat flour.

B.U = Brabender units.

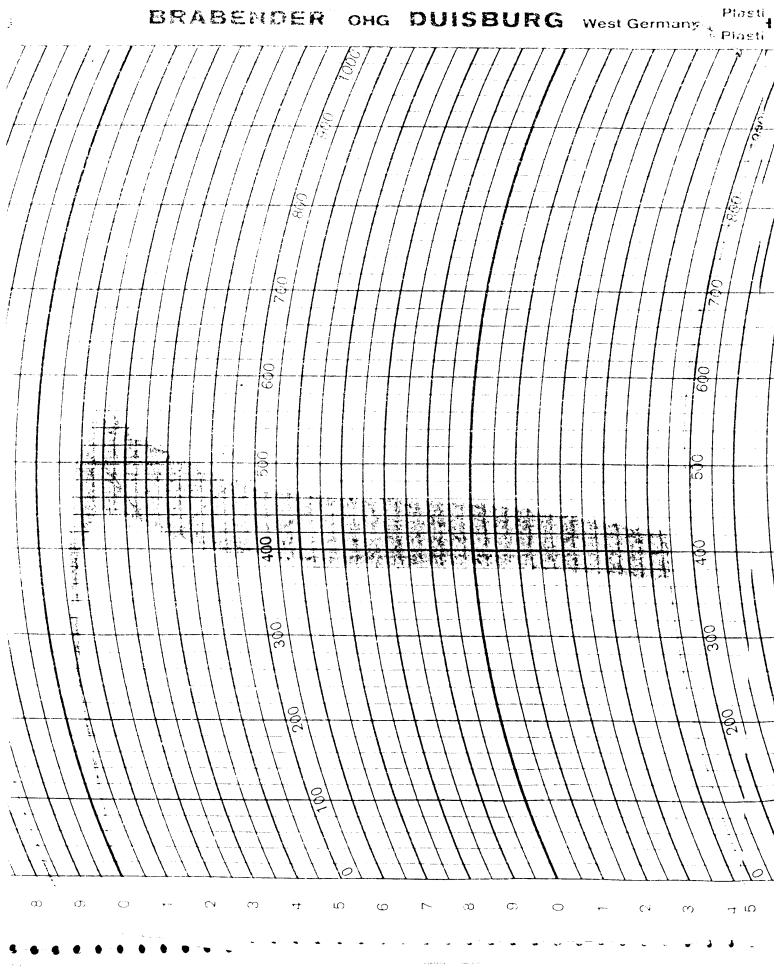


Fig (13-1): Farinograph parameterers of cakes dough with 0.5% GMS

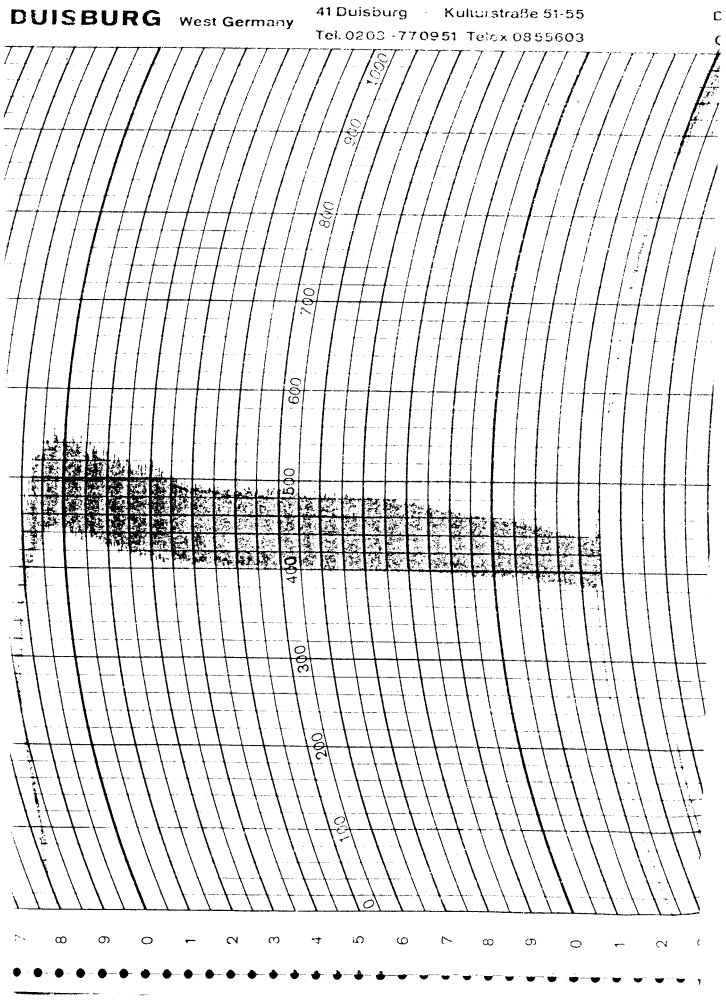


Fig (13-2): Farinograph parameterers of cakes dough with 0.5% Malt flour.

Table (17): Extensogram parameters of cakes from American wheat white flour and Turkey flour with GMS, and Malt flour.

Samples	Resistance To extension (R) B.U	Extensibility (E) mm	Proportional Number (R/E)	Energy (Cm^2)
100% TWF + 0.5% GMS	116	520	4.37	83.4
25%AWWF + 75% TWF + 0.5%Malt	145	570	3.93	74.6

A.W.W.F = American wheat (white) flour.

T.W.F = Turkey Wheat flour.

B.U = Brabender units.

GMS = Glycerol mono stearate.

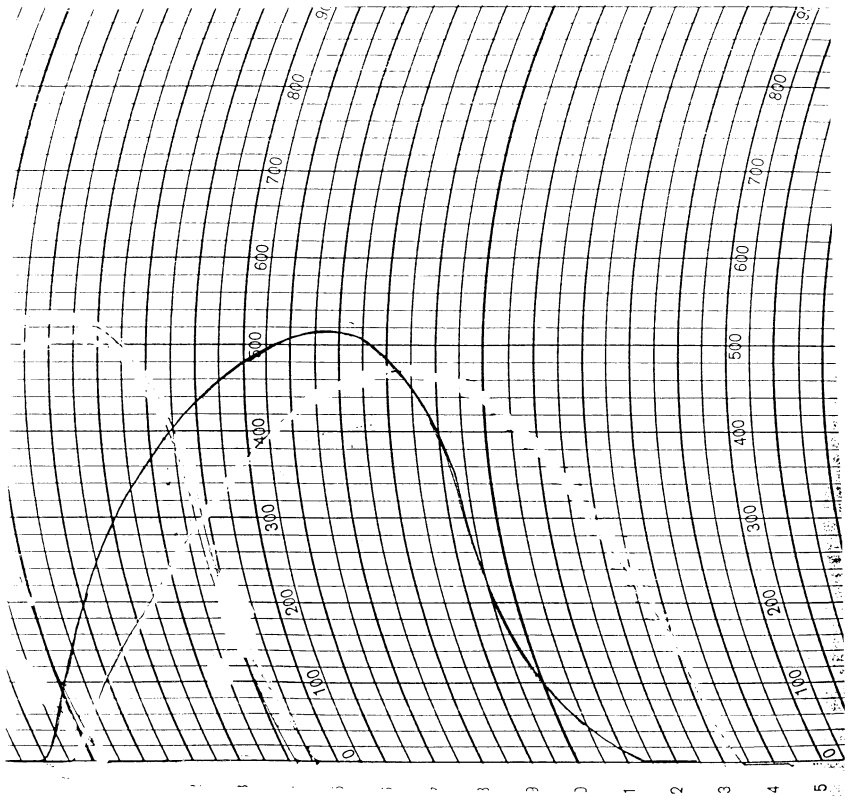


Fig (14-1): Extensograph parameterers of cakes dough with 0.5% GMS.

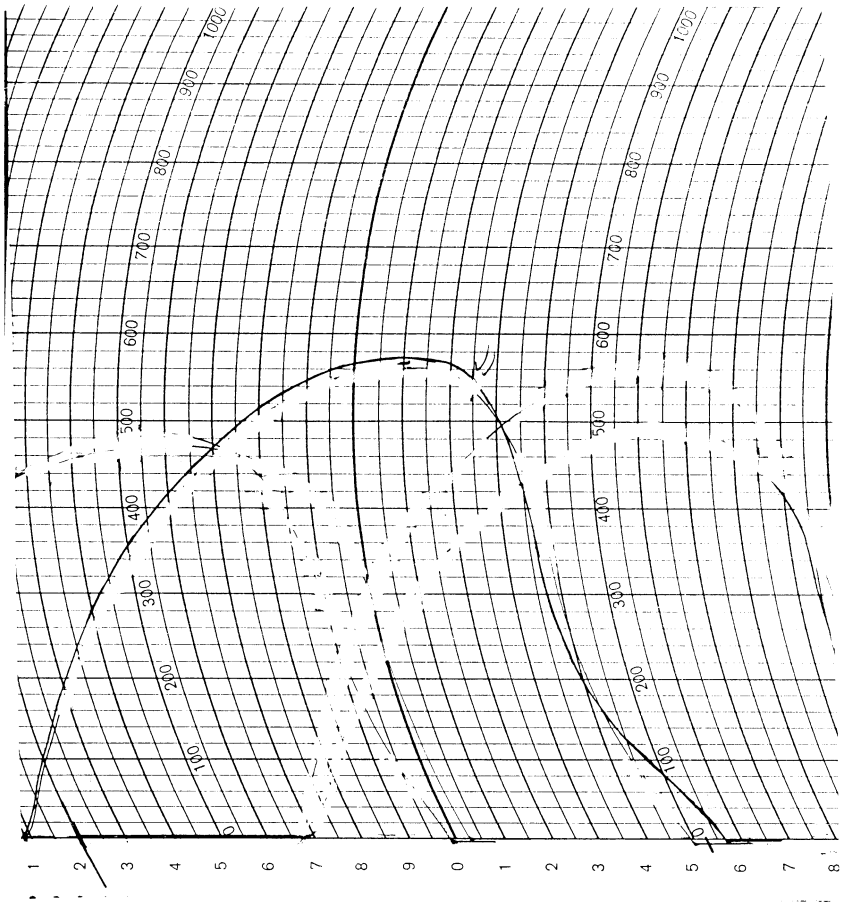


Fig (14-2): Extensograph parameterers of cakes dough with 0.5% Malt Flour.

5. Biscuits

5.1 Effect of adding 0.5% GMS and 0.5% Malt flour with different levels of blends American wheat (soft) white flour and Turkey wheat flour on sensory characteristics of biscuits produced.

The sensory characteristics, i.e., color of crust, texture of crumb, flavor, taste and general appearance of biscuits produced from different levels of blends wheat flour without and with 0.5% GMS and 0.5% Malt flour were evaluated by ten panelists and the obtained data were statistically and analyzed as shown in Table (18).

The data presented in Table (18) shows that adding 0.5% GMS gave higher values in Appearance, texture and over all score and the acceptace was very good followed by adding 0.5% malt flour and control. Also from same Table (18) revealed that biscuits produced from 50% American wheat white flour + 50% Turkey wheat flour had highest good scores in all parameters. The overall acceptability of all treatment prepared with 0.5% GMS was higher than control.

These results are in agreement with **Grinsted products, (1992)** who found that sweat biscuits preparation of 0.5% GMS was improved grain/ texture and mouth fell of the products and did not impair quality.

Table (18): Effect of different levels of blends American wheat white flour and Turkey wheat flour on sensory evaluation of produced biscuits.

5.2 Effect of adding 0.5% GMS and 0.5% Malt flour with different levels of blends American wheat soft white flour and Turkey wheat flour on physical properties of biscuits.

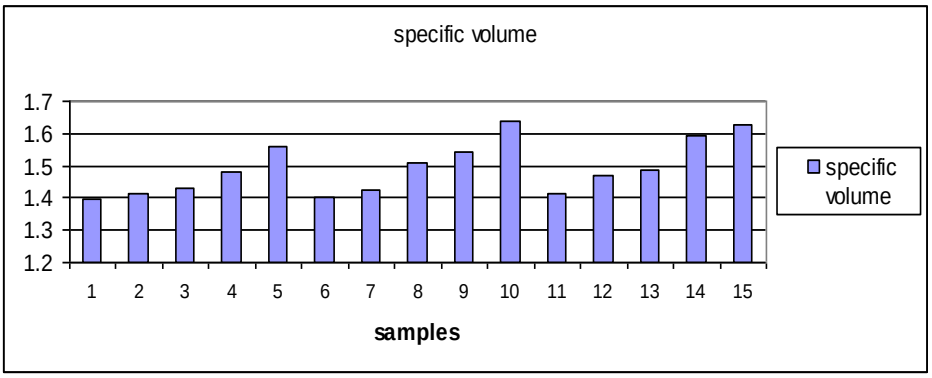
Physical properties of biscuits i. e weight, volume, specific volume and prepared from different level of blends wheat soft white flour and Turkey wheat flour without GMS and Malt flour (control) and with 0.5 % GMS and 0.5 % Malt flour and the data obtained is shown in Table (19).

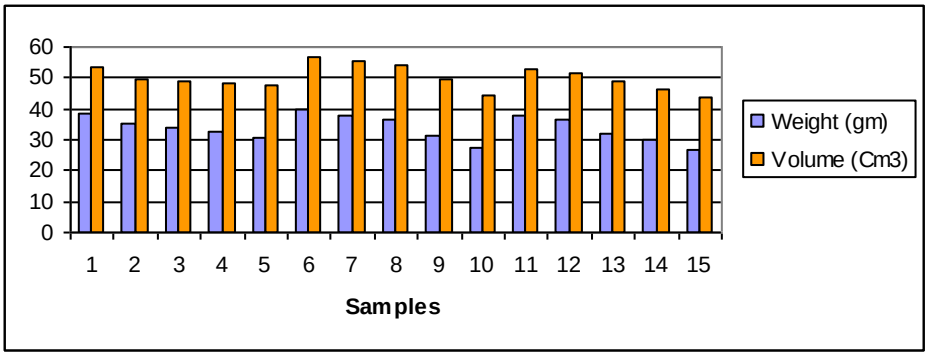
From the results presented in Table (19) it could be noticed weight was decreased gradually with increasing the levels of Turkey wheat flour. Also adding 0.5 % GMS and 0.5 % Malt flour to increase weight of biscuits than control. Also, volume was increased with increasing the levels of wheat Turkey flour and adding 0.5% GMS and 0.5% Malt flour. This may be due to stabilize of gluten network. These results are confirmed by those obtained by **Anon (1995).**

Properties	Weight gm	Volume Cm^3	Specific Volume Cm^3/gm	r

Control	**100% A.W.W.F**	38.27	53.4	1.395	4.890
	75% A.W.W.F + 25% T.W.F	35.10	49.5	1.411	4.9200
	50% A.W.W.F + 50% T.W.F	34.19	48.89	1.430	5.0673
	25% A.W.W.F + 75% T.W.F	32.48	48.03	1.479	5.1560
	100% T.W.F	30.59	47.7	1.559	5.2192
0.5% GMS	**100% A.W.W.F**	39.96	56.8	1.421	5.100
	75% A.W.W.F + 25% T.W.F	37.68	55.5	1.472	5.330
	50% A.W.W.F + 50% T.W.F	36.38	54.0	1.484	5.395
	25% A.W.W.F + 75% T.W.F	31.24	49.7	1.591	5.400
	100% T.W.F	27.35	44.5	1.627	5.410
0.5% Malt	**100% A.W.W.F**	37.78	53.0	1.403	5.1091
	75% A.W.W.F + 25% T.W.F	36.34	51.67	1.422	5.259
	50% A.W.W.F + 50% T.W.F	32.28	48.7	1.508	5.432
	25% A.W.W.F + 75% T.W.F	30.13	46.5	1.543	5.460
	100% T.W.F	26.96	44	1.638	5.4650

Table (19): Effect of adding 0.5% GMs and 0.5% Malt flour with different levels of blends American wheat soft white flour and Turkey wheat flour on physical properties of biscuits.





1 = 100% American white wheat flour

2 = 75% American white wheat flour + 25% Turkey wheat flour

3 = 50% American white wheat flour + 50% Turkey wheat flour

4 = 25% American white wheat flour + 75% Turkey wheat flour

5 = 100% Turkey wheat flour

6 = 100% American white wheat flour + 0.5% GMS

7 = 75% American white wheat flour + 25% Turkey wheat flour + 0.5% GMS

8 = 50% American white wheat flour + 50% Turkey wheat flour + 0.5% GMS

9 = 25% American white wheat flour + 75% Turkey wheat flour + 0.5% GMS

10 = 100% Turkey wheat flour+ 0.5% GMS

11 = 100% American white wheat flour + 0.5% Malt

12 = 75% American white wheat flour + 25% Turkey wheat flour + 0.5% Malt

13 = 50% American white wheat flour + 50% Turkey wheat flour + 0.5% Malt

14 = 25% American white wheat flour + 75% Turkey wheat flour + 0.5% Malt

15 = 100% Turkey wheat flour + 0.5% Malt

Fig (15): Effect of adding 0.5% GMs and 0.5% Malt flour with different levels of blends American wheat soft white flour and Turkey wheat flour on physical properties of biscuits.

5.3 Chemical composition of tested biscuits.

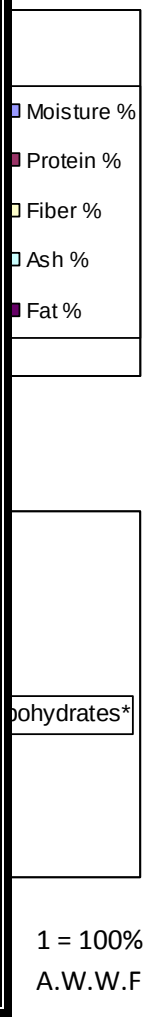
The changes in the chemical composition of baked biscuits were influenced by adding different levels of Turkey wheat flour with American wheat white flour and adding GMS and Malt flour. The results were obtained presented in Table (20).

From the results in Table (20) it could be observed that the protein content was increased in the produced biscuits with increasing the different levels of American wheat white flour. Also, fat (ether extract) was increased. While fiber, ash and carbohydrates were decreased in different levels of Turkey and American wheat white flours. These obtained results agreed with that reported by **Valjakka et al (1994)**.

From the above mentioned results, it could be observed that, GMS considered the best addition than malt flour.

Table (20): Chemical composition of biscuits produced from different levels of Turkey wheat flour with American wheat white flour with GMS and Malt flour (on dry basis).

	properties	Moisture (%)	Protein (%)	Fiber (%)	Ash (%)	Fat (%)	Carbohy-drates* (%)
CONTROL	100% T.W.F	5.2	8.30	0.58	1.45	14.3	70.13
	75% T.W.F + 25% A.W.W.F	6.3	8.39	0.58	1.47	14.25	69.01
	50% T.W.F + 50% A.W.W.F	4.9	8.51	0.6	1.5	12.9	71.59
	25% T.W.F + 75% A.W.W.F	5.9	8.7	0.6	1.5	12.8	70.05
	100%A.W.WF	4.3	8.87	0.62	1.6	12.6	72.01
0.5% GMS	100% T.W.F	5.46	8.35	0.58	1.45	14.3	69.89
	75% T.W.F + 25% A.W.W.F	5.3	8.39	0.58	1.49	14.4	69.84
	50% T.W.F + 50% A.W.W.F	4.4	8.52	0.6	1.5	12.79	72.19
	25% T.W.F + 75% A.W.W.F	5.7	8.7	0.6	1.53	12.7	70.77
	100%A.W.WF	4.8	8.87	0.62	1.6	13.4	70.71
0.5% Malt	100% T.W.F	5.2	8.7	1.13	1.50	14.91	68.56
	75% T.W.F + 25% A.W.W.F	5.75	8.76	1.08	1.58	12.5	70.33
	50% T.W.F + 50% A.W.W.F	4.8	8.86	1.1	1.62	12.9	70.72
	25% T.W.F + 75% A.W.W.F	4.2	8.94	1.0	1.65	13.2	71.01
	100%A.W.WF	4.9	9.2	1.19	1.69	14.11	68.91



1 = 100% A.W.W.F

2 = 75% A.W.W.F + 25% T.W.F

3 = 50% A.W.W.F + 50% T.W.F

4 = 25% A.W.W.F + 75% T.W.F

5 = 100% T.W.F

6 = 100% A.W.W.F+ 0.5% GMS

7 = 75% A.W.W.F + 25% T.W.F+ 0.5% GMS

8 = 50% A.W.W.F + 50% T.W.F + 0.5% GMS

9 = 25% A.W.W.F + 75% T.W.F + 0.5% GMS

10 = 100% T.W.F+ 0.5% GMS

11 = 100% A.W.W.F + 0.5% Malt

12 = 75% A.W.W.F+ 25% T.W.F+ 0.5% Malt

13 = 50% A.W.W.F + 50% T.W.F + 0.5% Malt

14 = 25% A.W.W.F + 75% T.W.F + 0.5% Malt

15 = 100% T.W.F+ 0.5% Malt

Fig (16): Chemical composition of biscuits produced from different levels of Turkey wheat flour with American wheat white flour with GMS and Malt flour (on dry basis).

5.4 Effect of Rheological properties of best doughs to produce biscuits.

From the results, the best treatments were 50% A.W.W.F + 50% T.W.F and 25% A.W.W.F + 75% T.W.F with 0.5% GMS and 0.5% Malt flour respectively.

Farinogram parameters in Table (21) and Fig (17) showed that the effect of 0.5% GMS and 0.5% Malt flour on water absorption of dough (%), development time (min), stability time (min) and dough weakening (B.U). from these results it could be noticed the water absorption and development time increased 54.7% and 4.5 (min) respectively, While stability time and dough weakening (B.U) decreased 2.5 (min) and 95 (B.U) respectively in 50% Turkey Wheat Flour + 50% American Wheat White Flour . While 25% Turkey Wheat Flour + 75% American Wheat White Flour water absorption and development time decreased 53.8% and 2.0% respectively. While stability time and dough weakening increased 3.0 (min) and 115 (B.U) respectively.

Extensogram parameters of biscuits in Table (22) were near the cakes expect Extensibility, Proportional number and Energy were highest than in cakes with 0.5% GMS and GMS gave strong network because area of surface was large. These results are confirmed with those reported by **Abd El-Lateef and Attia (1995).**

Table (21): Farinogram parameters of biscuits from American wheat flour and Turkey flour with GMS, and Malt flour.

samples	Water Absorption %	Development Time (min)	Stability Time (min)	Dough Weakening (BU)
50% AWWF + 50% TWF + 0.5% GMS	54.7	4.5	2.5	95
25% AWWF + 75% TWF + 0.5% Malt	53.8	2.0	3.0	115

AWWF = American wheat flour.

TWF = Turkey wheat flour.

B.U = Brabender units.

GMS = glycerol mono stearate.

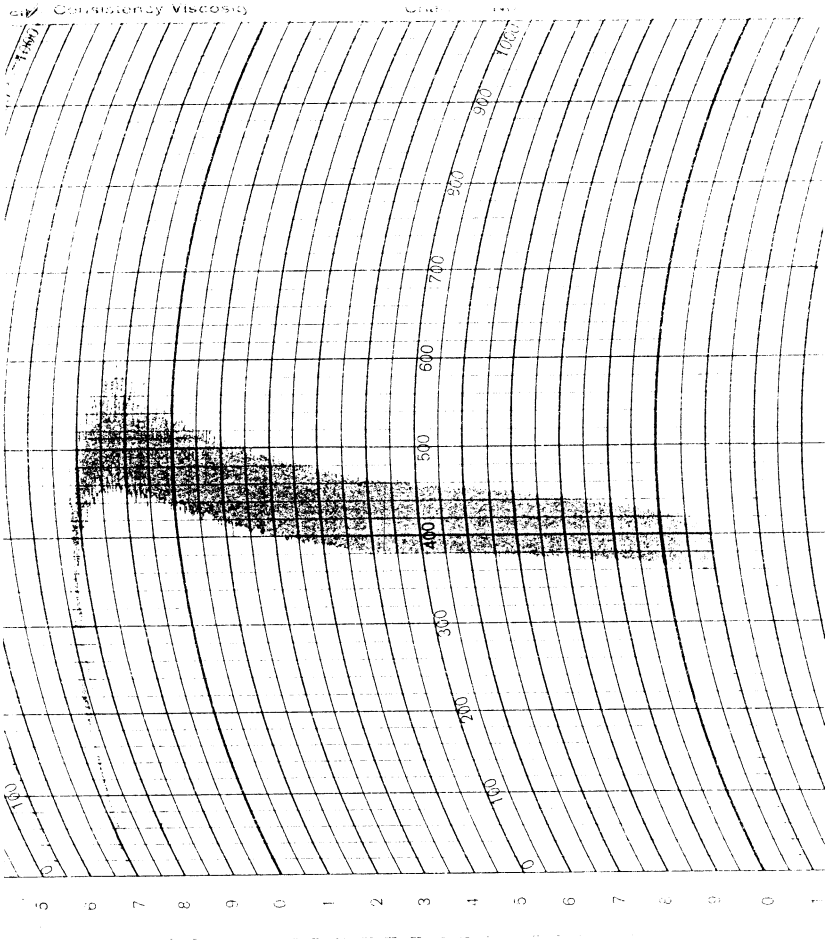


Fig (17-1): Farinograph parameterers of biscuits dough with 0.5% GMS.

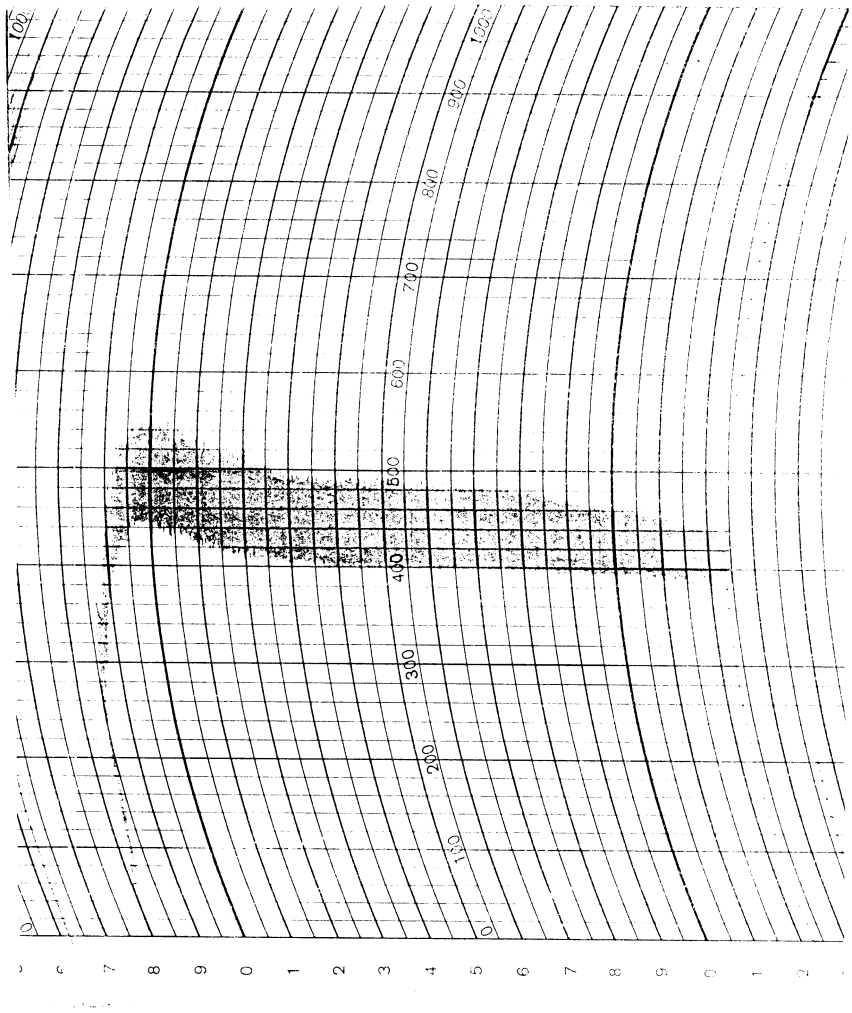


Fig (17-2): Farinograph parameterers of biscuits dough with 0.5% Malt flour.

Table (22): Extensogram parameters of biscuits from American wheat flour and Turkey flour with GMS, and Malt flour.

Samples	Resistance To extension (R) B.U	Extensibility (E) mm	Proportional Number (R/E)	Energy (Cm^2)
50% AWWF + 50% TWF + 0.5% GMS	120	590	4.92	71.3
25% AWF + 75% TWF + 0.5% Malt	145	570	3.93	74.6

AWWF = American wheat (white) Four.

TWF = Turkey Wheat Flour.

B.U = Brabender units.

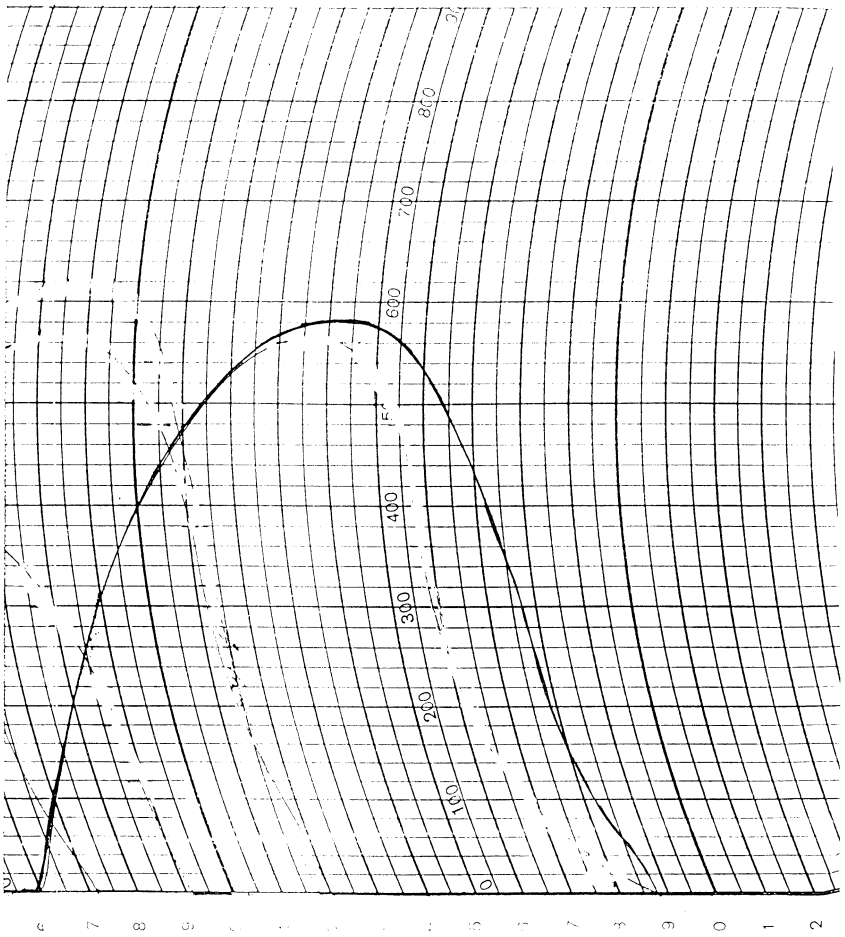


Fig (18-1): Extensograph parameterers of biscuits dough with 0.5% GMS

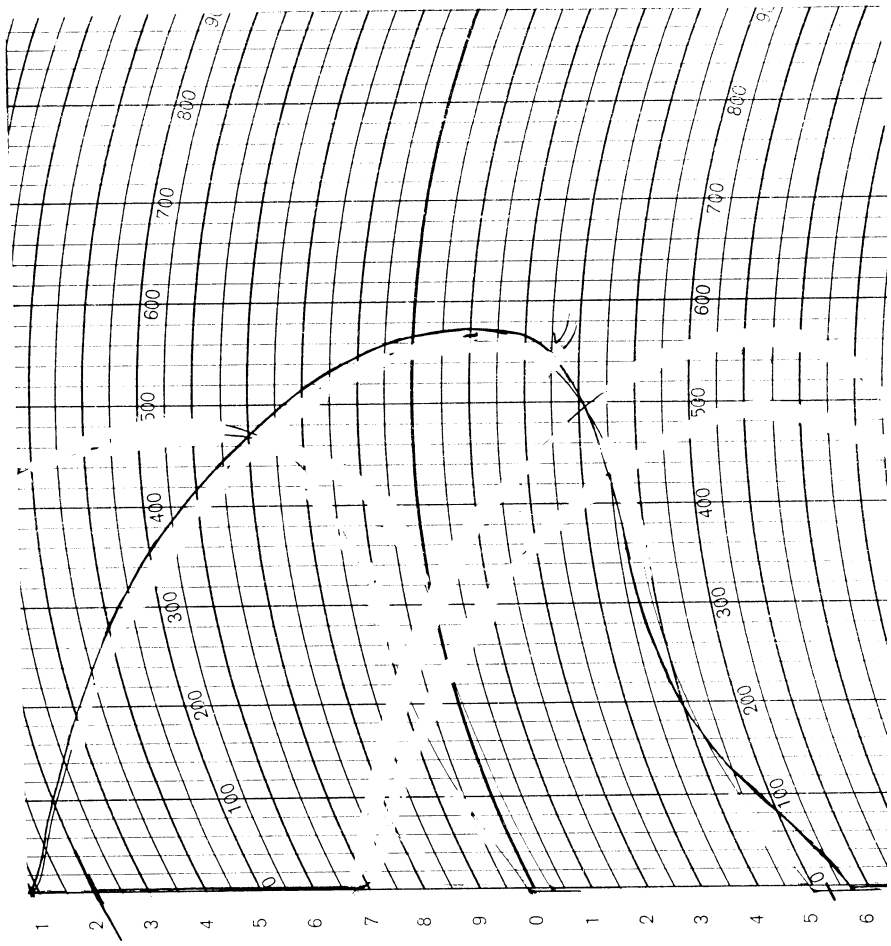


Fig (18-2): Extensograph parameterers of biscuits dough with 0.5% Malt Flour