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UTILIZATION OF SOME FOOD PROCESSING WASTES AS A FAT REPLACERS IN CAKES

Shehata, E. M. ; Badea A. Bessar ; Sahar R. Abd El-Hady and S. A. El kady
Food Technology Department, Fac. of Agric. Kafrelsheikh Uni., Egypt.

ABSTRACT

This study was proposed to investigate the possibility of utilization of some food processing wastes (i.e. whey protein concentrate and orange peels) as a fat replacers in cakes and there effects on the physical, chemical, sensory quality and nutritional characteristics.

Results indicated that the use of mentioned fat replacers could be increase and sensory quality characteristics in low-fat cakes. Butter could be replaced up to70% by whey protein concentrate and orange peels in cakes which were comparable to their full-fat cakes. Additionally some nutritional benefits were achieved as a results of fat replacers such as decreases in fat content and caloric value in all cases, beside the increase in protein content in case of using whey protein concentrate and increased crude fiber in case of use orange peels .

Biological evaluation using experimental rats showed significant decrease in total cholesterol, triglyceride, low density lipoprotein (LDL) and liver enzymes (GOT),(GPT) and showed increased in high density lipoprotein (HDL) in rats fed on the fat-replaced cakes. Additionally, such replacement has achieved many nutritional and health benefits when consuming the produced low-fat bakery products.

INTRODUCTION

Fats in foods serve three basic functions as sources of essential fatty acids, carriers of fat soluble vitamins and energy sources (Mela, 1990 and Papadima and Bloukas 1999).The apparent relationship between dietary fat and the development of cardiovascular disease and hypertension has prompted consumers to be more aware of and concerned about the amount of fat in their diet (O'Neil, 1993). A fat replacer is an ingredient that can be used to provide some or all of the functions of fat, yielding fewer calories than fat (Jonnalagadda and Jones,2005). Fat replacers are classified according to Akoh and Swanson (1987) and Gillat and Lee (1991) into three categories; lipid-based, protein-based and carbohydrate-based ingredients. Cake is popular bakery item that contain significant amount of fats. cake contains about 50 g fat/100 g flour (Abd El-Khalek, 2007). Increased proportions of fiber in foods are known to reduce the risk of colon cancer, obesity, cardiovascular disease and several other disorders (Anon, 2001). Addition of orange and apple peels up to 10% as fat replacers in beef burgers resulted in scores for sensory and physical qualities similar to control with high fat level without adding ingredient and decreased fatty acids, which indicated that this fibers (orange peels and apple peels) can be considered a good fat replacers in meat production (Bessar, 2008).Whey protein concentrate is an ideal functional ingredient which can combat both malnutrition and obesity and has

been used in the preparation of several food products (Tripathy *et al*., 2003; Pinto *et al*., 2007; Singh *et al.,* 2003; Rai and Jayaprakasha, 2004).Dietary fibers and pectin are considered as very excellent hypocholesterolemic agents in animals. These components decreased serum total cholesterol, total lipids, low density lipoprotein cholesterol (LDLc) and reduce serum triglyceride, (sGPT), and (sGOT) as recorded by Bobek *et al.,* (1998); Bobek (1999) and El-Zoghbi and Sitohy (2001). In this study whey protein concentrate and orange peels were used as fat replacers in preparing cakes. Their effect on chemical, physical and sensory characteristics were studied, also the biological evaluation of low-fat cake was carried out.

MATERIALS AND METHODS

Materials

The materials used in this investigation and their sources were

Wheat flour: (72% extraction), butter, powdered sugar, egg, milk, baking powder, yeast, vanilla and salt were obtained from a local market at Kafr El-Sheikh city, Egypt .

Whey protein concentrate: Whey protein concentrate was obtained from The Egyptian Co. for Advanced Foodstuff industries (Farag Group) Alexandria, Egypt .

Orange peels: Orange peels were obtained from El-Naser Company for Food Preservation (Kaha), Kalubeia, Egypt.

Kits for the biological evaluation:

Kits used in the determination of total cholesterol, high density lipoprotein cholesterol (HDL-cholesterol) and triglycerides in serum were obtained from Biodiagnostic Co., Cairo, Egypt.

Methods:

Preparation of orange peels:

The peels were washed and dried at (55 + 2 ^{o}C) for 2days in electric oven (E. Schulg 6 Co. Inh. Franz. K G) then ground into a fin powder, packed in polyethylene bags and kept at -20 ^{o}C until used.

Cake preparation:

The Cake was prepared according to Hanneman (1984). The formulation of cake consisted mainly of :100g flour (72%) extraction), 50g sugar, 50g butter, 35g whole egg, 4g milk, 3g baking powder, 0.2g vanilla, and 30 ml water. For low fat applications, fat replacers (i. e. whey protein and orange peels) were added with the drying ingredients to replace 30,40,50 and 70% of butter used in cake formula.

Chemical analysis

Moisture content, ether extract (fat), protein, crude fiber and ash content in raw materials and cakes were determined using the methods outlined in A.O.A.C. (2000). Total carbohydrates were calculated by difference. Caloric value of raw materials and products was calculated according to the following equation:

E (caloric value) = 4(carbohydrate %+ protein %) + 9 (fat%)

Physical measurement of dough and cakes:

Dough pH was measured by direct immersion of a pH electrode in the dough at room temperature (25 + 2 ^{o}C) using a digital pH meter. Specific gravity was determined according to (Khalil,1998). Volume was determined by rape seed displacement (A.A.C.C.,1983).Specific volume of cakes were calculated by dividing the volume of bakery products (in cm^3) by their weight (in g). And water uptake were determined according to the methods described by Kramer and Twigg (1973).

Sensory evaluation of cake:

Organoleptic evaluation of different processed cake was performed by a semi-trained panel of judgers using none-point hedonic-scale for color, taste, aroma, texture, sponginess (only in cake) and overall acceptability. The panelists were asked to record their degree of preference on an evaluation card as given below (Watts *et al.,* 1989).

Biological evaluation:

Animals and experimental design:

Male Sprague-Dawley strain rats (15 rats) weight rated between 81-90gm and purchased from the farm of general organization of serum and vaccine (Helwan farm). After feeding basal diet for one week (acclimation), rats were divided randomly into 3 groups (n=5) and feed on the test diet cakes for five weeks. The composition of basal diet according to A.O.A.C. (1995) are shown in Table (A).

Table (A): Composition of basal diet.

Ingredient	Weight g/kg
Corn starch	723
Casein	122
Corn oil	50
Cellulose	50
Salt mixture	40
Vitamin mixture	10
DL-methionine	3
Choline chloride	2

The tested cakes were chosen because they were higher in total sensory score and used in feeding the rats as shown in Table (B).

Table (B): Experimental design:

Dietary group	Feeding group	Salt mixture	Vitamin mixture
Group (1)	Rats fed control cake (full fat) (control)	40g/kg	10g/kg
Group (2)	Rats fed cake with70%whey protein concentrate	40g/kg	10g/kg
Group (3)	Rats fed cake with 70% orange peels	40g/kg	10g/kg

Body weight and food intake were recorded weekly over the six week experimental period. Blood samples were taken from rats at the end of the experiment. The blood samples were collected after 12 hour fasting from vein plexus eye, put of samples into dry clean centrifuge tube and left to cold. The

blood was centrifuged for 10 minutes at 3000 rpm to separate the serum, which was stored frozen at (-18+2 °C) until biochemical analysis (El-Khamissy, 2005). The liver, kidney, spleen and heart of each animal and weighted immediately. Body weight gain (BWG) and food efficiency ratio (FER) according to the method of Chapman *et al.* (1959) .

Biochemical analysis

The concentration of Triglyceride was measured according to the method of Fossati and Prancipe(1982). Total cholesterol and High density lipoprotein cholesterol (HDL) were determined following the method of Richmond (1973). Low density lipoprotein cholesterol (LDL) concentration was calculated as the difference between total cholesterol and HDL cholesterol according to the method of Freiedwald *et al.* (1972). Atherogenic index is an indication for susceptibility for atherosclerosis which was calculated as described by Kawase *et al*. (2000) Liver function (GOT), (GPT) were determined according to the method described by Varley *et al.* (1980).

Statistical analysis:

Data of chemical analysis, physical measurements, sensory evaluation and biological analysis were subjected to analysis of variance followed by Duncan's multiple range tests according to Steel and Torrie (1980).

RESULTS AND DISCUSSION

Proximate chemical composition and caloric value of fat replacers (whey protein concentrate and orange peels) as compared to butter:

Table (1) showed that fat replacers, as they were prepared for use in cake formulas, have lower moisture content, ether extract (fat content), and caloric value when compared to butter, but protein content, crude fiber, ash and available carbohydrates higher than the butter. According to chemical composition of the used fat replacers and butter, fat replacers were found to have much lower caloric values than the butter. From the obtained results, it can be say that the higher carbohydrate content of fat replacers can be provide their capacity to act as fat replacers, as mentioned by (Siljestrom and Bjorck, 1992) They reported that the higher carbohydrate content of legume paste provides their capacity to act as fat replacers.

Table (1): Gross chemical composition and caloric value of butter and fat replacers (g/100 g on dry weight basis)

Samples	Moisture	Ether extract	protein	Crude fiber	ash	Total* carbo-hydrates	Available Carbo-hydrates	Caloric Value (Kal/100g)
Butter	14.84^{a}	97.34^{a}	1.20^{e}	0.0^{d}	0.40^{c}	1.06^{e}	106^{e}	885.06^{a}
Whey protein concentrate	3.83^{d}	3.42^{b}	66.29^{a}	0.0^{d}	7.00^{a}	23.29^{d}	23.29^{d}	389.10^{b}
Orange peels	10.67^{a}	5.60^{c}	2.67^{c}	13.38^{a}	4.24^{b}	87.4 9^{a}	74.11^{a}	357.52^{c}

Each value is an average of three determinations Values followed by the same letter in columns are not significantly different at P<o.o5

Total Carbohydrates were calculated by difference.

In addition to high protein and fiber content which lead to enrichment of nutritional value of products made with these fat replacers.

Use of fat replacers in the production of low fat cakes.

Proximate chemical composition and caloric value of cakes made with fat replacers:

Results in table (2) showed that the chemical composition of cakes was affected by replacing whey protein for butter. A gradual increase in protein content, moisture content and ash were associated with the increase in fat replacement level which was higher than the control cake. For ether extract (fat content) decreased and available carbohydrate were significantly ($P<0.05$) increased by increasing fat replacement levels. Regarding to caloric value of the produced low fat cakes, it was noted that cakes made with fat replacement levels of 30, 40, 50 and 70% by whey protein concentrate had lower caloric value by 7.14, 9.51,11.85 and 16.65% in average than the control cake, respectively. Increase in these compounds were due to their higher contents of whey protein concentrate, which improved their quality. Crude fiber content was not affected by fat replacement.

Table (2): Proximate chemical composition and caloric value of cakes made with fat replacers (g/100 g on dry weight basis)

Constituents / Cake / Samples		Moisture	Ether extract	Protein	Crude fiber	Ash	Total* Carbohydrates	Available Carbohydrate	Caloric value (Cal/100g)
Whey protein concentrate	control	27.81^{e}	23.00^{a}	9.91^{e}	0.57^{a}	2.43^{e}	64.66^{a}	64.09^{a}	503.00^{a}
	30%	28.69^{d}	16.61^{b}	19.67^{d}	0.57^{a}	3.42^{d}	60.30^{b}	59.73^{b}	467.08^{b}
	40%	29.31^{c}	14.48^{c}	22.92^{c}	0.57^{a}	3.75^{c}	58.85^{c}	58.28^{c}	455.12^{c}
	50%	30.06^{b}	12.35^{d}	26.54^{b}	0.57^{a}	4.08^{b}	57.39^{d}	56.82^{d}	443.35^{d}
	70%	30.7^{a}	8.09^{e}	32.69^{a}	0.57^{a}	4.74^{a}	53.86^{e}	53.79^{e}	419.21^{e}
Orange peels	control	27.81^{e}	23.00^{a}	9.91^{e}	0.57^{e}	2.43^{e}	64.66^{e}	64.09^{e}	503.00^{a}
	30%	28.60^{d}	16.94^{b}	10.13^{d}	2.57^{d}	3.01^{d}	69.33^{d}	66.76^{d}	465.33^{b}
	40%	31.13^{c}	14.92^{c}	10.20^{c}	3.25^{c}	3.19^{c}	70.91^{c}	67.66^{c}	452.74^{c}
	50%	32.30^{b}	12.90^{d}	10.28^{b}	3.92^{b}	3.39^{b}	72.45^{b}	68.53^{b}	440.16^{d}
	70%	33.40^{a}	8.86^{e}	10.42^{a}	5.25^{a}	3.77^{a}	75.58^{a}	70.33^{a}	415.07^{e}

Each value was an average of three determinations
Values followed by the same letter in columns are not significantly different at P<0.05
*** total Carbohydrates were calculated by difference.**

The aforementioned results are in agreement with Abd El-Khalek (2007) who reported that the percentage of calories from fat in cakes made with simplesse (protein based) as a fat replacer by replacement level 35, 50, 75 and 100% of butter by weight were lower than the control. Regarding to orange peel results showed that moisture content, protein, crude fiber, ash

and available carbohydrate were increased as the replacement level increased. For fat content and caloric value of the produced low-fat cakes have lower caloric value than the control cake, The aforementioned results are in agreement with Abd El-Baky and Selim(2008) who concluded that the utilization of orange peels in some biscuits results in increase of its contents of fiber and ash.

Physical properties of cakes made with fat replacers:

Physical properties of the cake dough and cakes in which butter was replaced with whey protein concentrate and orange peels are given in Table (3). The pH of the dough of fat-replaced formulas was not significantly ($P<0.05$) different from that of the control cake dough, the same observation was found regarding dough specific gravity. Water uptake for cake made with whey protein concentrate was increased by increasing the replacement levels and specific volume, increased by increasing replacement level. These results are in agreement with those reported by Singh *et al.* (2003) who reported the efficiency of whey protein concentrate as a replacer to egg solids in cake making, which is especially useful for people suffering from egg allergy. They found that increase in whey protein concentrate from 4 to 10 g per 100 g flour led to increase weight and volume of cakes. For orange peel the results showed that replacing the butter with orange peel led to dough with significantly ($P<0.05$) lower pH when compared to that of the control cake dough , specific gravities of fat-replaced dough were not significantly ($P<0.05$) different from the control dough. For cakes water uptake and specific volume of fat-replaced cakes have increased by increasing of fat replacer.

Table (3): Physical properties of cake made with whey protein concentrate and orange peels as a fat replacers

Samples		Dough		Cakes	
		pH	Specific gravity (g/cm^3)	Water uptake (%)	Specific volume (g/cm^3)
Whey protein concentrate	control	6.61^{a}	0.93^{a}	50.70^{e}	2.2^{e}
	30%	6.51^{a}	0.96^{a}	51.00^{d}	2.4^{d}
	40%	6.48^{ab}	0.95^{a}	53.00^{c}	2.9^{c}
	50%	6.45^{b}	0.93^{a}	54.30^{b}	3.7^{b}
	70%	6.42^{b}	0.96^{a}	56.00^{a}	4.00^{a}
Orange peel	control	6.61^{a}	0.93^{a}	50.70^{e}	2.2^{d}
	30%	6.51^{a}	0.95^{a}	57.73^{d}	2.4^{c}
	40%	6.48^{ab}	0.95^{a}	59.00^{c}	2.6^{b}
	50%	6.45^{b}	0.94^{a}	60.16^{b}	2.9^{a}
	70%	6.42^{b}	0.94^{a}	61.16^{a}	3.2^{a}

Each value is an average of three determinations

Values followed by the same letter in columns are not significantly different at ($P<0.05$)

Sensory characteristics of cake made with fat replacers:

Results in Table (4) showed that color, taste, aroma, texture, and sponginess of cakes prepared using fat replacement levels 30, 40, 50 and 70% of butter (by weight) was increased by increasing the replacement levels

and overall acceptability of cakes were highest than their full fat counterpart. This results are in parallel with Attia *et al.* (2000) who found that the cake processed using wheat flour that replaced by 20% of protein isolated from tomato seeds gave the highest score for color, while cake made by using wheat flour that replaced by 10% tomato seed protein had scores for taste and texture that were nearly similar to those of cake that prepared using wheat flour only.

Table (4):Sensory characteristics of cakes made with fat replacer

Cake samples / Sensory characteristics		Color	Taste	Aroma	Texture	Sponginess	Overall acceptability
Whey protein concentrate	control	8.6^{c}	8.7^{b}	8.6^{b}	8.7^{a}	8.7^{b}	8.7^{b}
	30%	8.6^{c}	8.6^{c}	8.7^{a}	8.6^{b}	8.7^{b}	8.7^{b}
	40%	8.7^{b}	8.7^{b}	8.6^{b}	8.7^{a}	8.7^{b}	8.7^{b}
	50%	8.8^{a}	8.8^{a}	8.7^{a}	8.7^{a}	8.8^{a}	8.8^{a}
	70%	8.8^{a}	8.8^{a}	8.7^{a}	8.7^{a}	8.8^{a}	8.8^{a}
Orange peels	control	8.6^{b}	8.7^{a}	8.6^{b}	8.7^{b}	8.7^{b}	8.7^{b}
	30%	8.7^{b}	8.7^{a}	8.6^{b}	8.7^{b}	8.7^{b}	8.7^{b}
	40%	8.7^{b}	8.4^{a}	8.6^{b}	8.7^{b}	8.7^{b}	8.7^{b}
	50%	8.8^{a}	8.0^{b}	8.7^{a}	8.8^{a}	8.7^{b}	8.8 ^{a}
	70%	8.8^{a}	7.6^{b}	8.7^{a}	8.8^{a}	8.8^{a}	8.8 ^{a}

Each value is an average of ten determination.
Values followed by the same letter in columns are not significantly different at (P<0.05)

The aforementioned results are agreed with Ahmed *et al*. (2009) who concluded that sensory evaluation of different cupcake types produced from wheat flour containing different levels of orange peel and essential oil showed that there are non-significant differences in taste and flavor between treatments (control with orange), orange peels 2.5%+ orange juice, orange essential oil 0.3% + orange juice and control.

Biological evaluation of cakes.

Body weight, weight gain, food efficiency and relative organ weight of rats fed control and low-fat cake diets:

Data in Table (5) indicated that the initial weight of rats ranged from 90.49 to 81.00 g while their final weight after 5 week biological evaluation ranged from 112.6 to 125.00 g. Weight gain of rats fed on cakes with 70% whey protein concentrate and 70% orange peels were found to be higher than those of rats fed control cake. For the rats fed on cakes with 70% whey protein concentrate the food efficiency ratio was lower than those of rats fed control cake. But food efficiency ratio for the rats fed on cakes with 70% orange peels were found to be higher than those of rats fed control cake. It means that the food efficiency was increase significantly (P<0.05) by increasing fat replacement of cake made with fat replacement. These results are in agreement with El-Bastawesy and Hareedy (2004) who concluded that the supplementation of high fat diets with 10% dietary fibers or 1% pectin increases feed efficiency ratio, body weight gain and daily body weight.

Also data in Table (5) showed that rats fed cake diets containing whey protein concentrate and orange peel as a fat replacer were not affected on liver weight and had a significantly (P<0.05) higher kidneys weight when compared to the control group. Spleen and heart weight, was not significantly influenced by using fat replacer (i.e. whey protein and orange peels). These results agree with those obtained by Mansour *et al.* (2003) who mentioned that heart, kidney and lungs weight were not significantly affected by fat replacer level.

Table (5): Body weight, weight gain, feed efficiency and relative organ weight of rats fed control and low-fat cake diets:

Weights	Component groups of rats		
	Group (1)	Group (2)	Group (3)
Initial body weight (g)	81.00^{c}	87.11^{b}	90.49^{a}
Final weight (g)	112.00^{c}	120.00^{b}	125.00^{a}
Body weight gain(g)	31.00^{c}	33.40^{b}	34.51^{a}
Food intake (g)	574.00^{c}	657.00^{a}	581.00^{b}
Feed efficiency (%)	5.4^{b}	3.9^{c}	5.9^{a}
Liver (%)	3.14^{a}	3.00^{a}	2.90^{a}
Kidneys (%)	0.64^{b}	0.74^{a}	0.79^{a}
Spleen (%)	0.32^{a}	0.35^{a}	0.34^{a}
Heart (%)	0.37^{a}	0.38^{a}	0.37^{a}

Each value was an average of five determinations
Values followed by the same letter in columns are not significantly different at P<0.05
G1= rats fed on control cake, G2 rats fed on cake made with 70% whey protein concentrate and G3 rats fed on cake made with 70% orange peels.

Effect of low-fat cake diets on some biological parameters in rats:

Results in Table (6) revealed that there are a significant decreases in total cholesterol, (LDL) cholesterol, triglycerides, atherogenic index and liver functions (GOT),(GPT) associated with the use of fat replacer instead of butter at the level of 70% whey protein concentrate and 70% orange peel.

Table (6): Effect of low-fat cake diets on some biological parameters in rats:

Serum analysis	Component groups of rats		
	Group (1)	Group (2)	Group (3)
Total cholesterol (mg/dl)	99.30^{a}	73.60^{c}	83.3.49^{b}
HDL-C (mg/dl)	66.16^{c}	67.00^{b}	70.23^{a}
LDL-C (mg/dl)	20.30^{a}	10.43^{b}	6.60^{c}
Triglycerides (mg/dl)	160.00^{a}	95.00^{c}	96.00^{b}
Atherogenic index	0.50^{a}	0.09^{c}	0.18^{b}
GOT (Iu/l)	35.80^{a}	20.30^{b}	19.50^{c}
GPT (Iu/l)	17.30^{a}	9.70^{b}	9.70^{b}

Each value was an average of five determinations
Values followed by the same letter in columns are not significantly different at P<0.05
G1= rats fed on control cake, G2 rats fed on cake made with 70% whey protein concentrate and G3 rats fed on cake made with 70% orange peels.
Total cholesterol (<200 mg/dL),Triglyceride (50 to 250 mg/dL), LDL-C (<160 mg/dL),HDL-C (>45mg/dL) (Bour,1995).
GOT = (8-40 IU/L), GPT = (5-30 IU/L), (Foster,1980, and Louz,1997)
High density lipoprotein cholesterol was a significant (P<0.05) increased by feeding low fat cake diets.

Diet high in saturated fats and cholesterol contributes to high blood cholesterol (Drummond and Brefere, 2001), so the reduction of fat content in diet by using the fat replacers may be the main cause of the reduction in serum cholesterol in rat groups.

Anderson *et al.* (1995) and Kerchhofs *et al.* (2002) reported that soybean has beneficial effect on plasma lipids and lipoprotein profiles. Also, Table (6) showed that feeding on diets containing fat replacers reduced the activities of liver enzymes in rats. These results are in accordance with those reported by El-Zoghbi and Sitohy (2001), Khalil *et al*. (2002) and Amer (2002), who reported that, dietary fibers and pectin had a positive effect on lowering GOT and GPT. Abd El-Bakey and Selim (2008) reported that the rats group fed on mandarin supplemented diet had the highest reduction values 23.81 and 26.66% of GPT and GOT, respectively.

CONCLUSION

As a conclusion of the above mentioned research it could be noted that, fat replacers under investigation (i.e. whey protein concentrate and orange peel) can be used to replaced portions of fat of cake with70% of butter by whey protein concentrate and orange peel while keeping the good sensory quality characteristics. Additionally, such replacement has achieved many nutritional and health benefits when consuming the produced low-fat bakery products.

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الاستفادة من بعض مخلفات تصنيع الأغذية كبدائل للدهون في صناعة الكيك

السيد محمود شحاتة. بديعة عبد الرحمن بيصار. سحر رمضان عبد الهادى و سمير عبد المعطى القاضي.
قسم تكنولوجيا الأغذيه – كلية الزراعة – جامعة كفر الشيخ

أجريت هذه الدراسة بغرض الاستفادة من كلا من مركز بروتينات الشرش وقشور البرتقال كبدائل جيدة للدهون في صناعة الكيك حيث أمكن استبدال أجزاء من الدهن حتى نسبة ٧٠ ٪ بواسطة مركز بروتينات الشرش وقشور البرتقال في الكيك مع الاحتفاظ بخواص عضوية حسية جيدة بالاضافه إلى ذالك فان تناول الكيك المصنع بهذا الاستبدال حقق فوائد غذائية وصحية عالية حيث تم تقليل كمية الدهن و كمية الطاقة الناتجة وزيادة نسبة البروتين في حالة الاستبدال بمركز بروتينات الشرش وزيادة الألياف الغذائية في حالة الاستبدال بقشور البرتقال.

وقد أجريت دراسة بيولوجية باستخدام فئران التجارب حيث تم تغذيتها على الكيك المصنع باستخدام بدائل الدهون و أوضحت النتائج انخفاض في كلا من الكوليستيرول والجليسريدات الثلاثية و الليبوبروتينات المنخفضة الكثافة وكذالك إنزيمات الكبد و ارتفعت نسبة الليبوبروتينات عالية الكثافة.

وبناء على ما تقدم يجب تشجيع مصانع الأغذية على تجهيز والاحتفاظ ببعض مخلفات التصنيع مثل مركز بروتينات الشرش و قشور البرتقال و التوصية بالاستفادة منها كبدائل لأجزاء من الدهن في بعض منتجات المخابز.

قام بتحكيم البحث

أ.د / مسعد عبد العزيز ابو ريه	**كلية الزراعة – جامعة المنصورة**
أ.د / عبد الباسط عبد العزيز سلامه	**كلية الزراعة – جامعة كفر الشيخ**