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INVESTIGATION OF PIG FAT DERIVATIVES IN SOME FOODSTUFFS PRESENTED IN LOCAL MARKETS

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Abstract

The study aimed to investigate the pig fat and its products in some products, especially baby sweets and gelatin, in addition to other products available in the local markets of Baghdad city, and to identify the cards of significance and their conformity with Iraqi standards. 64 samples of these products were collected from the local markets of Baghdad city and the information mentioned in their identification cards was collected. Pig products were detected using the PCR technique. The results of the study showed that (52) products of the studied products did not contain the full information about the brand, the country of origin, ingredients and additives in Arabic and the language of the country of origin, while the rest of the products were not written in Arabic And it was limited to the foreign language or the language of the producing country or lacked some information about the ingredients or country of origin or additives. It was noted that the product was free from pig products or pig fat in 12 products, including pork products, A thoughtful products. These results are in violation of the Iraqi Standard No. 230 of 1989, which stipulates that the labeling card for canned and packed foodstuffs should include information on the name of the food item, country of origin, meal number, date of production and expiry, list of ingredients, size and weight. And that the lack of any of this information is the food is not usable. The results showed that all studied products were free of pork products.

***Keywords*:** pig fat**,** Significance Card, Food Additives.

Introduction

States are concerned with the development of food laws and legislation to protect consumers from the consumption of adulterated foods because of their impact on the health and quality of food. There are many cases in which the food is adulterated, including containment of food additives not included in the standard specifications and when the media card violates the reality of food, which leads to deceiving the consumer. The food is also fake When the name of the material is not mentioned on the box, its weight or size, the number of its contents and the name of the factory, all items must be mentioned clearly in the card statement. Consumers, especially in developing countries, which spend about 60-70% of their income on food, are often exposed to intentional food misuse and may result in serious health risks and financial losses to consumers (Directory of methods of fraud and trade methods of identification, 2014).

Some laws in developed countries have prohibited the mobilization of food in containers that affect the safety of food or contain false or misleading data or misleading diagrams. The purpose of card statements is to provide the consumer with the facts that enable him to consciously choose the commodity he wishes to purchase, The card should carry some important data: the name of the food product, the country of origin, the net content of the package, the list of ingredients, the nutritional value, shelf life, storage, health warning, quality, and the name and address of the product, packer, distributor or importer (Hamzawy, 2006).

Food additives are natural or artificial substances added to foods for specific purposes, and the legal definition of the additive is regulated by the Food Code of the Food Code as a substance that is not used as food in itself, but becomes part of its ingredients directly or indirectly) Which are added to affect specific food properties or serve other technological functions of food, including preservatives, antioxidants, emulsifiers, stabilizers, colored, local, flavor, and regulated for acidity, fumigants, moisturizers and others. The European countries and many countries around the world rely on the E system developed by the European market, where each authorized substance is used in the food industry in a number to distinguish it from others. Most additives are given a number in front of the letter E instead of the scientific or chemical name of this substance List of food ingredients (Taylor 2006, Sibai 2010).

In view of the large commodity flow experienced by the Iraqi market and the high number of border crossings, accompanied by the weakness of the regulatory bodies and the inability to control the large quantity of imported goods has increased talk through social media for the presence of pork products in some food products, especially children's sweets such as gelatin and others This is an important necessity to conduct this study, which aims to investigate pig products in these products due to the absence of previous studies on this subject. It also aimed to identify the types of additives for these products, especially that most consumers have Its products are children that poses a health effect on them.

Materials and Methods

Materials:

The products to be inspected were purchased from the local market of Baghdad city and included (64) miscellaneous samples and given the symbols shown in Table (1):

Table 1: I am considered food products and their brands

	Brand	Product Name			Brand	Product Name	
1	Gelatin	Bebeto	A1	33	Chocolate	Hersheys	A33
2	Gelatin	Jelaxy	A2	34	Candy Jelly	Vidal	A34
3	Gelatin	Jelly Mini Cup	A3	35	Candy Toffe	Werthers Original	A35
4	Gelatin	Haribo Fantasia	A4	36	Candy Jelly	Foster Clarck	A36
5	Dried Fruit	Vania	A5	37	Chocolate	Schogetten	A37
6	Chocolate	Quality street	A6	38	Candy Jelly	Hazelnut Paste	A38
7	Potato Chips	Lorenz	A7	39	Chocolate	Dessert	A39
8	Candy Milk	Jonny Krocker	A8	40	Chocolate	After Eight	A40
9	Nestle	Sidan Train	A9	41	Cheese	Kiri	A41
10	Gelatin	Cakato	A10	42	Nestle	Johnny Crocker	A42
11	Candy Jelly	Aruba Jelly	A11	43	Gelatin	Haribo Teeth	A43
12	Marshmallow	Miss U	A12	44	Gelatin	Jelly Pudding	A44
13	Chocolate	Mozart Herzl	A13	45	Chocolate	Deitry Milk	A45
14	Chicken Cream	Quaker	A14	46	Gelatin	Jellopy	A46
15	Cream of Nuts	Nutella	A15	47	Gelatin	Mr.Bears	A47
16	Cream of Nuts	Nutella	A16	48	Chocolate	Damac	A48
17	Biscuit	Nutella	A17	49	Chocolate	Nestla	A49
18	Biscuit	BN	A18	50	Fruit Candy	Vinut	A63
19	Marshmallow	Winnie	A19	51	Corn Flakes	(Cereva)	A51
20	Cacao	Kandy egg	A20	52	Biscuit	Digestive	A52
21	Biscuit	Butter crips	A21	53	Biscuit	Lotus	A53
22	Cheese Cake	Betty crocker	A22	54	Chocolate	m&m	A54
23	Gelatin	Jelly	A23	55	Gelatin	Fruit Jelly	A55
24	Gelatin	Jelly Belly	A24	56	Gelatin	Haribo Primavera	A56
25	Minto Tablets	Rainbow Mentos	A25	57	Gelatin	Haribo Roulatte	A57
26	Indomi	Indomi Noodles	A26	58	Gum	Ice Cubes	A58
27	Gum	Big Babol	A27	59	Chocolate	Lindt Hello	A59
28	Chocolate	Master Piece	A28	60	Chocolate	Milka	A60
29	Cooked Cheese	Kaptein	A29	61	Gelatin	Jelly Ice Fruit	A61
30	Cheese	Alma	A30	62	Candy with Coconut	Natures	A62
31	Marshmallow	Marshmallow	A31	63	Chocolate	Kandy Egg	A63
32	Gum	Smint Gum	A32	64	Chocolate	Kinnder	A64

Significance Card

The food label was tested on the samples of the studied samples, which included information on (type of product, brand, country of origin, additives, reference to pig products or not).

Work Method

The method in (Biotecon Diagnostics, 2019) was followed which included the following steps:

1. 200 mg of each sample was taken in a 2 ml.
2. Add 1 ml of Extraction Buffer and mix thoroughly with Vortex for 30 seconds.
3. Add 80 ml of proteinase K and incubate at 72°C for 30 minutes (2-3 times during incubation in the heart of the tube).
4. Centrifugal centrifugation was performed at 12,000 cycles / minute for 10 minutes.
5. 600 microliters of the top solution were carefully transferred to a 2 ml tube containing 200 microliters of isopropanol absolute alcohol and mixed carefully. Transfer the mixture to the filter tube containing a filter of fiber glass fleece.
6. A centrifuge was carried out at a speed of 5000 cycles / minute for one minute. The liquid was filtered through the filter. A wash was carried out with 450 microliters of the washing buffer and a centrifuge was carried out at 5000 cycles / minute to get rid of the washing solution.
7. The washing was repeated again using 450 microliters of the washing solution followed by a centrifugal operation at 13000 rpm for 30 seconds to dispose of the residue of the washing solution.
8. Transfer the filter column (containing the filter) to a sterile test tube and add 200 microliters of the Elution Buffer solution at 70°C and incubate for 5 minutes at room temperature.
9. Centrifuge was carried out at 5000 cycles / minute to obtain the staining containing the DNA
10. Store the samples at a temperature of 2-8 m or freezing (-15) - (-25) m until the use.

Results and Discussion

Significance Card

The results shown in Table (2) show that (52) products of the studied products did not contain the full information on the brand, country of origin, ingredients and additives in Arabic and the language of the country of origin, while the rest of the products (12) Product information in Arabic is limited to the English language or language of the producing country or lacks some information about ingredients, country of origin or additives, The reference to the absence of these

products of pig products was lost in (11) of which only a product free of pig products, while not referred to in (53) of them.

These results are in violation of the Iraqi Standard No. 230 of 1989, which stipulates that the labeling card for canned and packed foodstuffs should include information on the name of the food item, country of origin, meal number, date of production and expiry, list of ingredients, size and weight. And that the lack of any of this information is the food is not usable.

(FAO 2003, FAO and WHO 2010) emphasized the need for a labeling of the packaging including any material written, printed or photocopied in the accompanying food packaging card to promote their sale, Food labels, food additives, weight, country of origin, product title, production batch, date of production, expiry date and storage instructions.

Some laws in developed countries have prohibited the mobilization of food in containers that affect the safety of food or contain false or misleading data or misleading diagrams. The purpose of card statements is to provide the consumer with the facts that enable him to consciously choose the commodity he wishes to purchase, The card should carry some important data: the name of the food product, the country of origin, the net content of the package, the list of ingredients, the nutritional value, shelf life, storage, health warning, quality, and the name and address of the product, packer, distributor or importer (Hamzawy, 2006).

Among the requirements of (9) established by the Standardization Organization for the Arab States of the Gulf for Halal Foods is the establishment of the necessary guarantees to distinguish halal food at every stage of manufacturing, processing, storage and handling, which referred to the inviolability of pork meat and products In food and its products and identified ways to detect them. The Saudi Food and Drug Authority stipulated that the consignment of meat, poultry and its products be accompanied by an official Islamic slaughter certificate approved by the competent authority in the country of origin and authenticated by the embassy of the importing country indicating that the slaughter took place in an altar licensed according to Islamic law. According to (Standardization Organization for the Arab States of the Gulf, 1998)

Additives

The information on the labeling of the studied products (Table 2) showed the use of additives significantly in these products, and included acidic substances (citric acid E330, lactic acid E270, malic acid, adipic acid E355, ascorbic acid, acetic acid, , Fumaric acid E297, tartaric acid) and emulsifiers, which included (soy lecithin E417, lecithin E476, mono crystalline and E472, E471). In addition to emulsifiers E322, E331, E339, E330, E450, E452, E542)). It also used industrial color materials such as E163, E163a, E162,160a, E160, E150, E143, E140, E133, E130, E129, E122, E120, E110, E102, E100).

Table 2 : Additives used in the studied products

	Additives	Origin	Brand	Product	No.
Exist	Citric acid, Gelatin, Flavors, Wax E903, E901, Colors E129, E133, E110, E102	Turkey	Bebeto	Gelatin	1
Exist	Vitamin C, A, Calcium, Iron, Gelatin, Citric acid, Wax E903, E901, Caramel, Colors E150a, E130	Turkey	Jelaxy	Gelatin	2
Not Exist	Fruit flavor, No information	Malaysia	Jelly Mini Cup	Gelatin	3
Exist	Citric acid, Wax E903, Semi-natural flavors	Turkey	Haribo Fantasia	Gelatin	4
Not Exist	No information	Iran	Vania	Dried Fruit	5
Not Exist	Lactic acid, Lecithin E417	England	Quality street	Chocolate	6
Not Exist	Monocrystalline and bicarbonate, Emulsions, Natural and Semi-natural flavor, Industrial colors	Germany	Lorenz	Potato Chips	7
Not Exist	Antioxidants E321, E320, Soy Lecithin E476, Yeast E503, E500, Vanilla flavor	Ukraine	Jonny Krocker	Candy Milk	8
Not Exist	Soybean emulsion E322, Natural flavors, Colors E160a	Turkey	Sidan Train	Nestle	9
Not Exist	Bactericidal Gelatin	------	Cakato	Gelatin	10
Not Exist	Fumaric acid E297, E355 Adipic acid, Tri-sodium citrate (acid regulator), E451, Silicon dioxide, Semi-natural flavors, E129 E133, Phenylalanine.	Lebanon	Aruba Jelly	Candy Jelly	11
Exist	Bactericidal Gelatine, Industrial flavor, Colors E133, E129, E110, E102	China	Miss U	Marshmallow	12
Not Exist	Brandy, Alcohol, Sorbitol, Invertase, Lecithin, Sunflower, Few soy ingredients	Germany	Mozart Herzl	Chocolate	13
Exist	Starch, flavors, Maltodextrin, Citric acid, Tocapherol, Sodium dicatate, Sulphate, .	Austria	Quaker	Chicken Cream	14
Exist	Soy lecithin, Flavors	Germany	Nutella	Cream of Nuts	15

Not Exist	Sugar, Palm oil, Hazelnut, Cocoa powder, Skimmed milk powder, Whey powder, Soy lecithin, Vanillin, Soy milk	Italy	Nutella	Cream of Nuts	16
Not Exist	Not available in Arabic	Poland	Nutella	Biscuit	17
Not Exist	Ammonium bicarbonate (lever material), Sodium bicarbonate, Lecithin	France	BN	Biscuit	18
Not Exist	Not available in Arabic	Turkey	Winnie	Marshmallow	19
Exist	Ammonium bicarbonate, Sodium bicarbonate, Flavoring materials	--------	Kandy egg	Cacao	20
Not Exist	Sodium carbonate (crane material)	Belgium	Butter crips	Biscuit	21
Exist	E271E,472,E340, E341, E450, E339, E327, E407,E330,Colors (E100,E160), E503, E500,Soy E322	U.A.E.	Betty crocker	Cheese Cake	22
Not Exist	Sodium acetate, Carrageen, Citric acid, Potassium sorbate, Pigments and Flavors	---------	Gelly	Gelatin	23
Not Exist	Not available in Arabic	Thailand	Jelly Belly	Gelatin	24
Not Exist	Arabic gum, Citric acid, Esters of fatty acids, Wax, Colored materials (Curcumin, Anthocyanin)	Holland	Rainbow Mentos	Minto Tablets	25
Not Exist	Flavors E621, Yeast extract, Ginger Powder,	Indonesia	Indomi Noodles	Indomi	26
Not Exist	Industrial flavors, Soy lecithin E323, Antioxidant E320, Red color E162	China	Big Babol	Gum	27
Not Exist	Soy lecithin E322, E476, Industrial vanilla fFlavors, Fermentation material E504, E500.	Poland	Master Piece	Chocolate	28
Not Exist	Emulsifying salts (E331, E452, E450)	Holland	Kaptein	Cooked Cheese	29
Not Exist	Emulsifying salt E542, Acid Regulator (E270, E500)	Austria	Alma	Cheese	30
Not Exist	Gelatine fish, Industrial Vanillin, Flavors (E124, E171, E133)	China	Marshmallow	Marshmallow	31
Not Exist	E420, E976, E950, E901, E414, E466, Phenyl alanine, E171,Colors E133, E321 (BHT)	Turkey	Smint Gum	Gum	32
Not Exist	Did not mention	---------	Hersheys	Chocolate	33
Not Exist	Acid Regulator (Citric acid, Malic acid, Tartaric acid), Glycerin, Bacterial Gelatin, E471	Spain	Vidal	Candy Jelly	34
Not Exist	Sorbitol E420, Vanillin flavor, Soy lecithin E322,	Germany	Werthers Original	Candy Toffe	35
Not Exist	Acid regulators (E330,332), industrial flavors, colores (E160, E162), Texture Holder E407.	Malta	Foster Clarck	Candy Jelly	36
Not Exist	Soy lecithin E322, Vanilla flavor, Crane materials (Sodium hydrocarbons, Ammonium hydrocarbons)	Germany	Schogetten	Chocolate	37
Not Exist	Soy lecithin E322, Vanilla flavor	Turkey	Hazelnut Paste	Candy Jelly	38
Not Exist	Carginease Colors E110, E122, E133, Sweeteners Tri-calcium phosphate	U.S.A.	Chocolate Dessert	Chocolate	39
Not Exist	E322, Citric acid, Substrate , Infertase E1103	England	After Eight	Chocolate	40
Not Exist	Emulsifying salts (E330, E331, E339), Precipitated agents (E401, E407)	Poland	Kiri	Cheese	41
Not Exist	Antioxidant (E320, E321), Soy lecithin E476, Yeast (E500, E503) , Vanilla flavor	Ukraine	Johnny Crocker	Nestle	42
Not Exist	Bactericidal gelatine, Citric acid, Flavorings, Titanium di oxide E171, Wax (E903, E901)	Turkey	Haribo Teeth	Gelatin	43
Not Exist	E330, Carogen , Potassium sorbate, Cyclamate, E401, Sodium benzoate, Flavors, Colors	Turkey	Gelly Pudding	Gelatin	44
Not Exist	Not available in Arabic	China	Deitry Milk	Chocolate	45

Exist	Bactericidal Gelatine, E330, E903, Flavors, Colores E102, E110, E129, E133	Turkey	Gellopy	Gelatin	46
Not Exist	Bactericidal Gelatine, Citric acid E330, Colors (E140, E160, E162) , Wax (E901, E903)	Turkey	Mr.Bears	Gelatin	47
Not Exist	Lecithin sunflower E322a, Vanilla flavor	Turkey	Damac	Chocolate	48
Not Exist	Lecithin sunflowe E322ar, Vanilla flavor	Turkey	Nestla	Chocolate	49
Not Exist	Citric acid E330, Ascorbic acid, Flavor materials, Colors (E102, E110)	Vietnam	Vinut	Fruit Candy	50
Not Exist	Emulsion E471	Lithuania	(Cereva)	Corn Flakes	51
Not Exist	Sodium bicarbonate, Malic acid, Emulsions E472.	U.K.	Digestive	Biscuit	52
Not Exist	Bicarbonate sodium hydroxide, Lecithin, Citric acid E330	Belgium	Lotus	Biscuit	53
Not Exist	Arabic gum E414, E322, E322a, Colors (E100,E133,E160,E160a, E162), Iron oxide and hydroxide	---------	m&m	Chocolate	54
Exist	Lactic acid E270,Pectin E440,Colors (E110,E122,E133,E143)	Turkey	Fruit Gelly	Gelatin	55
Exist	Not available in Arabic	Turkey	Haribo Primavera	Gelatin	56
Not Exist	Bactericidal gelatin, Citric acid E330, Bee wax E901, Colored material E163	Turkey	Haribo Roulatte	Gelatin	57
Not Exist	Gelatin, E322, Industrial colors, Aspartame E901	U.S.A	Ice Cubes	Gum	58
Not Exist	Soy lecithin E322, Flavors, E500, Ammonium hydrogen carbonate, Potassium carbonate	Germany	Lindt Hello	Chocolate	59
Not Exist	Did not mention	--------	Milka	Chocolate	60
Not Exist	Citric acid E330, Potassium, Caranoba wax, Industrial flavors	China	Gelly Ice Fruit	Gelatin	61
Not Exist	Citric acid E330, Colors (E160, E160a, E110, E140, E140)	Turkey	Natures	Candy with Coconut	62
Not Exist	Ammonium bicarbonate, Sodium bicarbonate E500, Flavoring materials	South Africa	Kandy Egg	Chocolate	63
Not Exist	Soy lecithin E322, Vanillin flavor, Nutrient additives	Italy	Kinnder	Chocolate	64

It also used various industrial flavoring materials (vanillin, E171, E124.E621) and leavening materials such as sodium bicarbonate, sodium carbonate, Sodium chloride, E240, sodium phosphate E340a, calcium phosphate E241, E450 diphosphate, E550, E503, E503). The studied products included candles such as E901 beeswax, E903 and E413 wax, E414 and E466 cellulose gum. Such as E440, E407.E40, and on preservatives such as potassium sorbate Sodium benzoate as well as other additives.

The widespread and increasing use of industrial food additives of all kinds has led to increased warnings of health risks to humans and consumers of these foods. It has been found that foods that entice children from sugary sweets, soft drinks, biscuits, pickles and gypsum, which are consumed daily or more than once a day, As a result of the current conditions in the country, as a result of the poor health controls on imported food entering the country from many ports and far from control and conform to the standard specifications, the Iraqi market was filled with Materials with high impact in children's health (Standardization Organization for the Arab States of the Gulf, 1998).

Many children today suffer from health disorders that doctors have to diagnose. Some of the causes are due to chemicals that contaminate the food and drinks that children eat. There are many food or processed food products in the market, which vary in taste, taste and colors. Which encourages the children to eat them as well as the chemical compounds added to them such as colored, exhausted, preservative, etc., which may not comply with some food factories in the quality specifications or products or these additives (Lebniyeh, 2010).

Some international companies use exciting methods to promote some unhealthy foods with high sugar, salt and fat content, which are consumed by children due to lack of control, lack of government legislation, obvious weakness in family culture, food awareness, neglect or neglect by the authorities concerned. Child Health (Obiadat, 2013).

Investigation of Pork Products

Polymerase Chain Reaction polymerase chain reaction (PCR) technique was used to detect pig products in the studied samples and according to the method in (Biotecon Diagnostics, 2019). The results showed that all samples studied in the Iraqi market were free of pig products.

There is no previous study conducted to investigate or disclose the products of pork in the food found in the Iraqi market, according to the researcher.

Pig meat and meat products are usually consumed immediately after processing and converted to different products or the excess fat and bones are recycled and converted into commercial products such as gelatin, glues and others (Bdinder, 2000). The methods of cheating by adding pork or its products and labeling the meat and its products are the most important challenges. These methods are rejected by international laws and regulations in general and by the consumer in particular for economic, religious or health reasons (Ahmed, 2005).

In a study by (Jaid and Sukkar, 2012) to detect and identify the phenomenon of cheating meat, including pork, they pointed out that the method PCR is the fastest and cheapest methods for the identification of meat and food control and detection of meat types.

It is possible to distinguish between pork and sheep meat by identifying fatty acid patterns and detecting histidine. Genetic engineering techniques and genetic fingerprinting are also used to detect meat cheats in pork, whether fresh or cooked. There are many techniques used to detect cheats of meat and meat products, but they are generally based on two methods. The first depends on the protein and its quality in the food. The second is based on the genetic content of the DNA bar, which is called hybrids using DNA Hybridization and the polymerase chain reaction technique (PCR) (Guide to Methods of Commercial Fraud and Methods of Identification, 2014).

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