

An analytical study of the first national food product from date palm products in Palestine (PALMIX)

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ABSTRACT

The beginning was an initial experiment end of 2012 through the production and marketing department at Omega. for Consultation & Development Co to produce the first food and patriotic product depends on date palm products with the addition of some of natural herbal and plant oil. The product went through several experiments, field studies, and laboratory analysis locally and regionally to be registered as national product by official bodies the Gaza Strip.

The studies and laboratory analysis have proven in both food analysis center in the Al-Azhar University – Gaza, and National Institute for Nutrition Researches in Egypt after taking random samples from the product(5-10) samples, the size of the sample bottle was 250 gm., then laboratory tests procedure accomplished “physics, chemises, and microbiology” for the samples and the results were: (Energy 347.9 - 438 k.cal), (Carbohydrate 65.16 - 77.12%), (Fat 8.2 - 12.48%), (Protein 3.44 - 4.24%), (Calcium 45 - 47 mg/100gr), (Potassium 511mg/100gr), (Ash 1.58 - 1.74%), respectively.

The results of Heavy Metals Report which is carried out by Public Health Lab (MOH) also showed that (Zinc 26.73 mg/Kg), (Total Iron 24.6 mg/Kg), (Sodium 0.45 g/Kg), (Potassium 3.11 g/Kg)

The Microbiology test results of samples also showed the product is totally free from any Fungi, Yeasts and Pathogenic Bacteria, these results adopted from laboratory of Palestinian Ministry of Health, Supply Ministry and Customer Protection Gaza Strip.

The field studies also for the product showed that it's lead to heal from many diseases, especially anemia because it contains iron, boron and vitamin “A” in addition to its impact on the stomach diseases and digestive tract because it contains vitamin “A” and “B1” in addition to the protection from osteoporosis because it contains calcium by high degree, it also Refurbished for blood circulation and increase the sexual energy to its contain of zinc and some of vitamins and it's useful in cases of patients with heart disease, especially high blood pressure, it is also considered as full food for Pregnant women and breastfeeding, it turns women hormonal activity back after childbirth.

We conclude from these studies and laboratory test that the product (PALMIX) is full food product to all family members as it contains many vitamins minerals, and compounds which are important for the body, energy-rich food product and strong general tonic and good food for children and appetizing and it's tonic for memory,

The product is free from any chemicals or any preservatives, there is no side effects or any negative impacts specially for people with diabetes.

This study has recommended the implementation of research and field studies on anaemic patients, especially children.

Keywords: date palm product, analysis, diseases.

INTRODUCTION

Because of its importance long ago Nutrition and Food issue still worries many countries of the world. Increased reports were issued by the United Nations around widespread hunger and wars in the Third world especially after the spread of wars & conflicts of Africa, Asia and the Middle East even though it has fertile lands and owns several sources that qualify it to be in the forefront of countries but wars and conflicts on those resources lead peoples to pay cost of the wars.

According to the nutritional status in the Gaza Strip, we find the worst because of siege, closure, and systematic destroying for agricultural lands continually, and not being able for accessing to food recourses although of existing feeding programs which applied by UN. In the Palestinian camps, there are 44% of children in Gaza are suffering from anemia. (the Nutritional status in Palestine (Isaac.J.,et.al 1995) Kanoa,B.,J, Hamed,T., Zabut,B.M (2011). Radi S.M (2010)

Few plant species have developed into an agricultural crop so closely connected with human life as the date palm's has. One could go as far as to say that, had the date palm not existed, the expansion of the human race into the hot and barren parts of the "old" world would have been much more restricted. The date palm not only provided a concentrated energy food, which could be easily stored and carried along on long journeys across the deserts. El-Sohaimy S.A. and Hafez E.E.(2010)

"Palmix" depend on many components and materials in its main composition which have directly benefit on human health because these materials contain nutrients, vitamins and minerals, especially dates products, which represent 70% of the composition of the product as main component, palm paste has been used as it contain many benefits to human body, and molasses-(dibs) which provide body with high energy and vitamins in addition to the usage of pollen because of its contain minerals and proteins and vitamins, with high-value, which is used to treat many cases of sexual dysfunction, infertility and others., Hassan, H.M.M (2011) Ganbi.H.H.A,(2012).

The fruit of the dates are good sources of sugars, vitamin C, provitamin A, of minerals and fibers. Its output in flesh added to its biochemical features, destine it to several potential technological transformations in the domain of food science, Sadiq,I. S (2013) Al-Jubouri, H.J ., Zaid, A (p 422-427). Date Palm Product (p125 -158) FAO.

The dates can be considered as a fruit, food, medicine, and as sweet. It can be an ideal and adequate food for humans because of containing main materials like sugar, amino acids, minerals, fats and proteins, and others. The Dates have significant therapeutic value as it contains antioxidants and sex steroids to contain the element phosphorus and boron and zinc.

Eating only 100 gm of dates, provide the body with full daily needs of each of magnesium and manganese, copper and sulfur, half of its iron, and quarter of its calcium and potassium. Dates contain high percentage of vitamin A and the total of vitamin B, especially vitamin Pripuflavin and Althiasan and an important source of folic acid. Nutritional and therapeutic value of Dates .rudyman,Kh (2003), El- sohaimy,S.A.et al (2010). In addition to using olive oil with 8% as its many benefits on health, especially for heart and stomach patients, especially breast cancer and so on, and as it contains amino acids and phenolic compounds- La Lastra, C et at (2001)

It has spread in recent times the use of alternative medicine using herbs nature as were used in the past prior to their use of drugs, which have sparked offenders often Plants Medical have many benefits are used to treat a variety of ailments and difficult cases and other grasses Natural does not have any side effects if used in a way correct and appropriate dosages. Rakshit, M and Ramalingam, C (2010)

Palmix also depend on medicinal herbs, and aromatic plants, which represent 12% of the product composition because of its many benefits, and for the treatment of many diseases. Spices constitute an important group of agricultural commodities which are virtually valuable in the culinary art. In India, spices are important commercial crops from the point of view of both domestic consumption and export. Besides, huge quantities of spices are also being consumed within the country for flavoring foods and are also used in medicine, pharmaceutical, perfumery, cosmetics and several other industries. There are over 80 spices grown in different parts of the world and around 50 spices are grown in India. The spices that India can offer in abundant quantities are pepper, ginger, turmeric, chilli, cardamom, celery, fenugreek, fennel, cumin, dill, coriander, cinnamon, ajowain (bishop's weed), cassia, clove, nutmeg and mace. Major spices of export are pepper, cumin, cardamom, ginger, turmeric and chillies. Other minor spices include ajowain, aniseed, celery seed, caraway, fennel, fenugreek, coriander, garlic, onion,

saffron, vanilla etc. Among the spices exported, pepper has the leading position in terms of both quantity and value realised. Beside this spices have a great potential to be used either for production of natural antibiotics and food preservatives. Almost every spices have some antimicrobial activity against human, food or plant pathogen even spices like turmeric have been used for preservation of organs. They also exhibit antioxidant property. Thus in future extensive research can be done to customise the multi-usage of spices in various fields. - Rakshit, M and. Ramalingam, C. (2010)

The Department of Nutrition for Health and Development, in collaboration with FAO, continually reviews new research and information from around the world on human nutrient requirements and recommended nutrient intakes. This is a vast and never-ending task, given the large number of essential human nutrients. These nutrients include protein, energy, carbohydrates, fats and lipids, a range of vitamins, and a host of minerals and trace elements.

Many countries rely on WHO and FAO to establish and disseminate this information, which they adopt as part of their national dietary allowances. Others use it as a base for their standards. The establishment of human nutrient requirements is the common foundation for all countries to develop food-based dietary guidelines for their populations.

-Passmore, R., Nicol, B.M., Rio, M.N (WHO 1974)

From this point has been the adoption of the components of this product, which consists of palm products because of its many benefits in addition to natural herbs to suit the needs and requirements of human food daily.

MATERIAL & METHOD

This study was conducted for the first food and national product at the end of 2012 “Palmix”, through the production and marketing department at Omega Company – Gaza. This product is made with 70% of the palm products (*date palm paste, date palm syrup, date palm pollen grain*), in addition to the 8% of olive oil, 12% from natural herbs (*Nigella sativa - fennel - anise - cinnamon – Sesame* and other herbs) 10% of the vegetable seeds and other nuts.

The aim of this study is to scoop mineral elements and compounds active in the new food product and its impact on human health. The product does not contain any chemicals or preservatives material..

Analytical methods

The first phase, where 5 samples of the product were taken randomly (sample size of 250 g glass) and the samples were sent to the food analysis center at the Al-Azhar University - Gaza, also a 15 random sample were

taken to the National Institute of Research and Nutrition _ Egypt in order to conduct laboratory tests (chemical, physicists Microbiology) including: (energy, carbohydrates, protein, fat, moisture, calcium, potassium, ash)

Also in this phase 5 samples were sent to the laboratory of the Ministry of Health, Gaza in order to analyze microbiology and heavy minerals like manganese, iron, phosphor, zinc, and sodium.

- Estimating of Carbohydrates by using a Spectrophotometer at wavelength (490 nm).
- Estimating of energy = (g protein x 2.44) + (g lipid x carbohydrate x 8.37 x 3.57)
- Estimating of Proteins by using the Kjeldahl method on the basis of Nitrogen
- Estimating of Calcium, Zn – F – Mn – K – Mg. by using Atomic Absorption.
- Estimating of Potassium by using Flam photometer.
- Fat content: extract samples through the extraction device using a mixture of Chloroform/Methanol, (2 : 1.)
- Ash: through using the device of Muffle furnace.
- %Moisture content :
$$\frac{M. \text{ initial} - M. \text{ dried} * 100}{M. \text{ initial}}$$
- % Total Solids = M. Dried / M.initial * 100

And in the second phase where field study has conducted through distribution of the product in the form of a random sample of patients, such as, sexual Weaknesses (40 study sample) and, Diseases of the stomach and digestive tract (10 S), and heart diseases (10 S) this was accomplished through pharmacies which existed in the area or individual cases.

In addition, this samples were distributed to group of children from 5 years to 12 years (40 child) in order to know the effectiveness of the product on the rate of activity, memory, and appetite

RESULTS & DISCUSSION

First Stage

Energy and carbohydrates and chemical elements:

Evidenced by the results of laboratory analysis of the product in the table (4), that shows the nutritional value of the product “Palmix” compared with nutritional value of dates and some varieties of other fruits table (1), we find that the product contains a high rate of energy (348 - 348 k Gal) average 393 k Cal, carbohydrates (65-77.12) average 71.1%, while the result of protein was (3.44 - 4.42) and average 3.43%, fat (8.2 - 12.48) average 10.34%.

While we show that the nutritional value of fruits and dates in the table (2) It's less than what is shown in the product, as the protein 2.2, energy 274 k Cal, 0.5 fat, sugars 72.9 gm.

We conclude from this study .table (7) that the product contains a high rate of energy, protein and fat, since it include 17-20% of the energy and 10% of the proteins that the common human requirement, and the percentage of fat in the product is high because it contains olive oil, some important herb, dates syrup “dibs”.

Mineral elements and vitamin:

Due to not being able to measure some of the elements and vitamins in the Gaza Strip due to closure and the lack of capabilities in the local laboratories, so the items available in dates syrup and pollen and paste of dates were approved, especially which is related to vitamins, phosphorus and magnesium and manganese as it shown in the tables (3,8,9,10).

The results of the laboratory analysis of the product as in the table (5). It contains calcium 47 mg / 100mg, potassium 511 mg / 100mg, zinc 2.67 mg/100g, iron, 2.46 mg/100g sodium 0.45mg /100gm, . And by comparing these results with the mineral elements of dates in the table (3) we find that the product is almost equivalent to the mineral content of dates in terms of mineral elements as the date contain, mg / 100 g : calcium 59 mg, phosphorus 63mg, magnesium, potassium 648 mg.

With comparing these result with body requirement, we find that the product provide the body with 25-30 % of its needs of potassium, about 7-10% of the calcium.20 -25% iron, and about 25% of the zinc table (6)

We conclude from this study that the product contains several kinds of minerals, vitamins that human need every day with varying percentage, because it contains (pollen gains, herbs, vegetables seeds) which involved in the production process

Second Phase

The Effect of taking the product on samples Sexual Dysfunction and Infertility:

Reference to the segment “samples” in the table (11) observed that about 75% of those who suffer from Sexual Dysfunction and infertility gave them good results and this resulted from the presence of zinc and boron and some herbs relevant and about 25% - 30% differ from sample to another by associated factors with this side effect of taking the product samples Sexual Dysfunction and infertility.

The Effect on Diseases of the Stomach and Digestive Tract and Intestines samples:

Near 85% of people who suffer from stomach diseases and digestive tract and intestines specially dyspepsia we find good result for this sample.

The Effect of Product on Heart Diseases Samples:

Those who suffer from heart disease, especially blood pressure has been observed that there is average response rate estimates to 60% of the samples and may be due to some other reason needs to be studied

The Effect of the Product on Children Samples (Anaemia, Activity, and Memory):

For segment of children still need study special cases of anaemia and memory

We conclude from this study that the product helps to treat cases of disease with varying percentages, especially with regard to sexual dysfunction, stomach disease and intestines, but need many specialized scientific studies on the Heart Diseases, Children

Note: Percentages shown above are considered estimated Microbiology Analysis:

Observed from the analyzed samples which sent to laboratories Ministry of Health and of National Economy table (12) that the samples are free of pathogenic bacteria, yeasts, chloroform molds and E.Coli, and this product is fit for consumption without any healthy obstacles. We conclude from this study that the product Palmix is a full healthy and good dietary product for all family member and provide the body with energy and vitamins and minerals needed for growth.

CONCLUSION

(PALMIX) product is food full product to all family members as it contains many vitamins and minerals, and compounds which are important for the body, energy-rich food product and strong general tonic and good food for children and appetizing and it's tonic for memory, the product is free from any chemicals or any preservatives, there is no side effects or any negative impacts specially for people with diabetes.

This study recommends the implementation of many of the studies, especially for children who suffer from anaemia in the Gaza Strip.

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Tables

Table (1): Nutritional value of the Dates, compared with some types of fruit:

Fruit types	Energy Contains	Protein Contains	Fat Contains
Dry Dates	233	2.4	.4
Semi-dry Dates	156	1.2	.3
Wet Dates	78	1.0	.4
Dates without nuclei	274	2.5	.5
Apple	49	.3	.2
Fig	75	.8	.2
Dates Syrup	386	0	0
Grape syrup	258	.7	.1

Table (2) : Chemical Elements of the Dates (100g/)

Elements	Content %
Water	22.5 %
Energy	274 Calories
Protein	2.2mg
Fat	.5 mg
Sugar	72.9gm
Crude fiber	2.3 gm
Ash (Mineral Elements)	1.9 gm

Table (3) : Mineral Elements and Vitamins /100gm

Elements	Content %
Calcium	59 mg
Phosphor	63 mg
Iron	3 mg
Potassium	648 mg
Vitamin A	50
Thiamin	.09 mg
Pripuflavin	.10 mg
Thiasin	2.2 mg

Table (4) : Palmix product Component Analysis:

Elements	T1	T2	Average

Calleries	348	438	393
Carbohydrate	65.11	77.12	71.1
Protein	3.44	4.42	3.93
Fat	8.2	12.48	10.34
Ash	1.58	1.47	1.52
Moisture	21.67	4.51	13.08

T1 - Al-Azhar Lab T2 - Egypt Lab

Table (5) : Mineral Elements & heavy metals /100gm of Palmmix

Elements	Content %
Calcium	47 mg/100g
Potassium	511 mg/100g
Zink	2.673 mg/100g
Iron	2.46 mg/100g
Sodium	.45 g/kg 45 mg /100g

Table (6) : Dietary Recommendations of Mineral Elements:

Elements	Children (7-10) years	Recommendation Dietary allowance mg/day		Pregnant and breast feeder women
		Male	Female	
Na	400	500	400	500
Calcium	800	800	800	1200
Magnesium	170	350	280	355
P	800	800	800	1200
K	1600	2000	2000	2000
Iron	9mg	10-15mg	10-12	15
Zn	5-8 mg	11	8	8

Table (7) : Dietary Recommendations of chemical Elements

Elements	Requirements
Carbohydrates	6 – 10 gm/kg from body weight
Energy	24 – 40 k Cal /body weight
Protein	1.2 – 1.4 gm /kg – body weight
Fat	15 – 20% from energy

Handbook on Human Nutritional Requirements, FAO/WHO 1974

Table (8): Proximate chemicals composition (g/100g dry weight) of palm pollen grain

Parameter	Palm pollen grains
Moisture (%)	28.80
Ash (%)	4.57
Grude fiber	1.37
Grude fat	20.74
Grude protein (%)	31.11
Carbohydrate (%)	13.41

Values are means of three replicates.

Table (9) : Vitamins composition of palm pollen grains:

Vitamins	Palm pollen grains
A (IU/100 g)	7708.33
E (IU/100 g)	3030.92
C (mg/100 g)	89.09

Values are means of three replicates.

Table (10) : Mineral composition (mg/ 100g dry weight) of Palm pollen grains

Mineral	Palm pollen grains
Boron (B)	309.4
Zink (Zn)	281.0
Selenium (Se)	305.0
Iron (Fe)	241.0
Molybdenum (Mo)	302.2
Copper (Cu)	319.6
Manganese (Mn)	284.0
Cobalt (Co)	305.5
Nickel (Ni)	302.4

Values are means of three replicates.

Sources Table (8-9-10-): Global Journal of Biotechnology & Biochemistry 6 (I): 01-07, 2011

Table (11): The effect of the product on diseases

Cases	No of sample	Result %
Sexual Dysfunction and infertility	40	75 %
Diseases of the Stomach and Digestive Tract and Intestines	10	85%
Heart Diseases Samples	10	60%
Children Samples (Anemia, Activity, and Memory	40	NA

Table (12): Microbiological analysis

Test	pathogenic bacteria	yeasts	chloroform	molds	E.Coli,
Result	Neg	Neg	Neg	Neg	Neg

