Preparation and Evaluation of Some Weaning Foods from Nectarine and Oats.

Abstracts

Nectarines and oats are good sources of vitamins and minerals needed for healthy growth, especially for children at weaning age; they are also widely available in the Egyptian market. They were used to enrich food mixtures for infants aged 6 to 24 months. In this stage, babies start eating semi-separated complementary foods. Five baby food blends were prepared using nectarines and oats as the basic components. Sensory properties, chemical composition, minerals (Ca, Mg, P, K, Na, Fe and Zn) vitamins (A, C, E, B1, B3, B6 and B9) total phenols, total flavonoids, and DPPH were evaluated for all the prepared blends. The results indicated that the Blend B4 (Oats 30%, Nectarine 60%, skim milk powder 5%, and Date palm 5%) It had the highest percentage of sensory acceptance compared to other mixtures. It is recommended to prepare compound baby food mixtures. Which consists of more than one kind, whether fruits, vegetables, or grains, because of their high nutritional value, as they are a good source of vitamins and minerals and can be easily prepared at home at a low cost compared to the price of baby food in the local market.

Keywords: Formulation, Sensory Evaluation, blended weaning food, nectarine , Oats.

1.Introduction

The weaning period is when solid foods are gradually introduced and exclusive breastfeeding is discontinued.The baby's weight is anticipated to

have doubled at six months, necessitating additional nutrients from dietary sources other than breast milk to meet their nutritional needs. Since growth is the most sensitive and easily measurable sign of health and nutrition for each individual kid, feeding newborn infants must precisely match their nutritional demands. A thin cereal gruel that varies in name based on the type of cereal or country is the most popular weaning food in Africa[1]**.**From 6 to 12 months of age, breast milk is still crucial, but solid food introduction is necessary to balance out milk feeds. In order to provide guidance on when to introduce first solids and what shape they should take, infant feeding guidelines have been developed globally [2,3,4]**.**

In order to supplement milk feedings, the World Health Organisation advises starting newborns on their first solid meals at 6 months of age. In order to help newborns satisfy their fluctuating nutritional needs, complementary foods must be introduced. In recent years, it has been debated whether spoon-feeding and baby-led weaning are mutually exclusive methods for introducing first solids. Smooth, runny purees are typically introduced as the first food texture, graduating to chewable solids as oral motor skills improve, according to the classic spoon-feeding method. Both methods require adult supervision to prevent the possibility of food choking an infant. The review emphasises the necessity for high-quality, well-designed research on various strategies for weaning babies to their first solid foods and recommends that a combined strategy be taken into consideration [5].

Nectarine (Prunus persica var. nucipersica), a peach mutant with smooth skin, is a member of the Rosaceae family, the Prunoidaesubfamily, and the genus Prunus[6]. It is presently regarded as the third-most significant stone fruit,

behind peach and plum. Although nectarine farming is limited to a restricted area due to farmers' lack of experience with the fruit, nectarine agriculture is common throughout the warmer temperate zones of both the Northern and Southern hemispheres. However, its commercial production has just recently begun in select areas of the North-Eastern and North-Western Himalayas [7]**.**Nectarines have a red, yellow, or white pulp, with the majority of types having an appealing red tint in a range of shades. The shape of fruits also varies greatly, ranging from spherical and beaked to flat. Nectarines are comparable to peaches in terms of nutrition. Fresh nectarines have a great flavour and scent, twice as much vitamin A as peaches, slightly more vitamin C, and much more potassium and fibre. Its fruits have a respectable amount of flavonoids, polyphenolics, and antioxidants such as lutien, zeaxanthin, and b-cryptoxanthin as well as vitamins C, A, and E[8].Additionally, nectarines are juicy, tasty fruits with a low calorific content (44 calories/100 g of pulp) and a strong antioxidant capacity that inhibits the production of ROS in human plasma to prevent oxidative stress. As a result, nectarines, which are increasingly regarded as functional foods and offer protection against chronic diseases, must be consumed [9].

After the plum and the peach, nectarines are a significant stone fruit. Due to its tangle-free nature and excellent nutritional content, nectarine farmingis currently replacing peach farming in the area. Fruits with a high antioxidant capacity and a low calorie content include nectarines, which are juicy and sweet. Only the North-Western and North-Eastern Himalayas in India are used for its cultivation [10].

According to[11]**,** this cereal contains a significant source of carbs, dietary soluble fibre, balanced protein, lipids, various phenolic compounds, vitamins, and minerals. Oat has drawn more attention from academic researchers and businesses as a result of the public's heightened awareness of the importance of good eating habits. Food-based businesses are creating unique food items by adding oats as an ancient grain to breakfast cereals, beverages, bread, and infant foods in order to improve nutritional content and capitaliseon the appeal of ancient grains[12].Oats are primarily used in snack bars and morning cereals, but their incorporation in other goods would considerably benefit customers due to their health-promoting qualities[13]**.** Because of its nutritional significance, oat has been valued as a crop since ancient times[14]**.**In addition to having an extraordinarily greater protein content than most other cereals, oats are well known for their effects on gut flora, glycemic management, and cholesterol levels. Numerous studies have been undertaken to examine the environmental impact of the production of conventional protein sources and the need to investigate more plant-based protein sources in response to the rising need for sustainable protein sources. It is significant to highlight that oat milk's health advantages have not been investigated. Oat milk is a suitable option for adults with any of the top eight allergens, which are dairy, eggs, fish, crustacean shellfish, tree nuts, peanuts, wheat, and soybeans[15]**.** Oats are also free of gluten, a protein that people with celiac disease or gluten intolerance must avoid. Although there is a chance of gluten contamination, oat milk may be manufactured in facilities that simultaneously process dairy, wheat, and other grains. Look for a product with a "gluten-free" label on the box if you are worried about gluten. According

to [16], this mark can be used voluntarily to identify goods that have less than 20 parts per million (20 ppm) of gluten.

A study was therefore designed to develop nutrient-dense, safe, low cost weaning food from the combination of Nectarine and Oats to evaluate its acceptability through organoleptic evaluation.

2.MATERIALS AND METHODS

2.1.MATERIALS

Nectarine, oats, skim milk powder and date palm were purchased in the Kafrelsheikh market in Egypt. Additionally, El-Gamhouria Chemicals and Drugs Company in Egypt provided the chemicals that were employed in the study.

2.2.Preparation of raw materials:

Formulation and processing were carried out in a lab environment. The seeds from the pulp of the nectarine and date palm fruits were separated after being sliced open. Nectarine, oat, and date palm pulp are steam boiled until tender. The ingredients were put into a Moulinex blender (Mixer Blender, Type: 741) that has cutters and a motor that smashes and homogenises each of the aforementioned ingredients into a mixture of pulp. The pulp and any rind are then separated from the mixture by passing it through a fine sieve. After that, it was frozen and packaged in plastic bags [17].

Preparation of formulated baby food formulas:

Five baby food blends were prepared using the basic ingredients Oat, Nectarine, skim milk powder and date palm. The Table (A) shows the different prepared formulas. After mixing the ingredients of the formulas, they were bottled in tight Jars, then thermally processed at 100º C for 40 min [18].

Table A: Ingredients of Baby Food blends.

Blend No	Blend Ingredients
1	Oats 90% + skim milk powder 5% + Date palm 5%.
2	Nectarine 90% + skim milk powder 5% + Date palm 5%.
3	Oats 45% + Nectarine 45% + skim milk powder 5% + Date palm 5%.
4	Oats 30% + Nectarine 60% + skim milk powder 5% + Date palm 5%.
5	Oats 60% + Nectarine 30% + skim milk powder 5% + Date palm 5%.

Table B: Proximate macronutrient content of local weaning food and Cérélac Nestlé ® (g.100g-1 DM).

Parameters(%) /Sample	Tanty Reine (TR)	Dina Baby (DB)	Cerelac Nestlé ®	Nestle Nigeria Plc, 2014	Recommended Pattern for children FAO/OMS(2006)
Moisture	7.88	7.36	3.11	4	5
Ash Content	3.08	2.54	1.04	2	2.9

Protein	17.77	11.02	15.90	16	15
Fat	10.50	4.14	9.08	9	8
Dietary Fiber	3.71	2.84	1.4**0**	5	3.8
Carbohydrates	59.12	72.16	69.61	64	68
Energy(Kcal)	401.90	369.82	423.24	353	400

2.3.Chemical Analysis of Prepared Baby Food Mixtures:

Moisture, protein, crude fibre, fat, ash levels, and minerals were assessed using the method described in [19]**.** By using the differential, total carbohydrates were computed. According to [20]**,** calorie values were derived from the sum of the percentages of crude protein and total carbs multiplied by a factor of 4 (Kcal/g), as well as the crude fat content multiplied by 9 (Kcal/g).

2.4.Sensory Evaluation:

According to [21], ten panellists from the Food Technology Research Institute at the Agricultural Research sensory evaluated five fresh baby food mixes at zero time. The scoring scheme was established for odor, taste, color, texture, mouth feel and overall acceptability.

2.5.Determination of Vitamin C and Vitamin E:

Vitamin C and Vitamin E of different baby food blends were determined according to the method described in the [22]. . using High Performance Liquid Chromatography (HPLC) Beckman model.

2.6.**Determination of vitamin A:**

Vitamin A content of prepared baby was determined according to the methods of [19]**.**

2.7.Determination of vitamin B1, B2, B3, B6 and B9 Contents:

Using The High Performance Liquid Chromatography (HPLC) Beckman model, the vitamins B1 (thiamin), B2 (riboflavin), B3 (niacin), B6 (pyroxidine), and B9 (folic acid) in prepared food for babies were identified in accordance with the procedure outlined in the [19].

2.8. Microbiological Evaluation:

All mixes created underwent the following tests: A total bacterial count, yeast, and mould were counted using [23]. American Public Health Association Methods (on standard plate count agar).

2.9.Determination of total phenol content (TPC):

The Folin-Ciocalteu method [24]. was used to determine the TPC of the extracts.

2.10.Determination of total flavonoid content (TFC):

The TFC was determined using a colorimetric procedure with the aluminum chloride technique as outlined by [25].

2.11. Determination of antioxidant activity (DPPH):

The DPPH radical scavenging activity method, as suggested by [26].

2.12.Statistical Analysis:

The obtained data from sensory evaluation and compositions were statistically analyzed by the Least Significant Differences value (LSD) at 0.05 levels probability according to the procedure of [27].

3.RESULTS AND DISCUSSIONS

3.1 Chemical composition of nectarine, oat, date palm and skim milk powder (on dry weight):

The chemical composition of nectarine, oat, date palm and skim milk powderwere recorded in Table (1). From the results in Table (1) revealed that nectarine, oat, date palm and skim milk powdercan be considered as good source of protein, fat, crude fiber, ash and carbohydrates. Protein content were ranged from 5.12 to 37.50%, fat from 0.85 to 7.45 %, fiber from 4.43 to 11.33, ash from 3.57 to 9.14%, carbohydrate from 52.94 to 89.57 % and energy value from 324.48 to 419.25 Kcal /100 g for nectarine, oat, date palm and skim milk powder respectively. Oat and skim milk powder contained the highest level of protein, while nectarine contained the highest level of fiber and ash, also oat contained the highest of fat and Energy value(Kcal /100 g) but, the date palm contained the highest of carbohydrate. These results were in near to those reported by[28] who found moisture (9.96%-10.47%), crude fat (7.23% -8.92%), ash (2%-2.15%) and carbohydrates (69.435%-75.625%) but similar in crude protein (11.61% -13.62%) and higher in Crude fiber (3.535%-5.875%) of oats.

Table 1: Chemical composition of nectarine, oat, date palm and skim milk powder (on dry weight).

Ingredient	Nectarine	Oat	date palm	skim milk powder
Protein%	7.06±0.30	13.15±0.45	5.12±0.21	37.50±1.20
Fat %	2.13±0.33	7.45±0.14	1.56±0.15	0.85±0.02
Fiber %	11.33±0.20	10.10±0.35	4.43±0.22	-

Ash%	9.14±0.27	4.50±0.32	3.57±0.14	8.71±0.34
*Carbohydrate %	81.67±2.66	74.90±0.56	89.57±2.19	52.94±1.16
Energy value(Kcal /100 g)	374.09±2.19	419.25±3.15	324.48±2.50	369.41±3.40

3.2 Mineral Contents of Oat, Nectarine, Date palm and Skim milk powder (mg/100g on dry weight):

The results in Table (2) revealed that nectarine, oat, date palm and skim milk powder can be considered as good source of mineral such as calcium (Ca), magnesium (Mg), phosphorus (P), potassium (K), sodium (Na), iron (Fe) and zinc (Zn).Data presented in Table (2) show the mineral contents of nectarine, oat, date palm and skim milk powder. The mineral contents ranged from 6.01 to 200 Ca, from 9.02 to 177 Mg, from 26 to 523 p, from 165 to 711 K, from 2 to 342.5 Na, from 0.05 to 4.72 Fe and from 0.17 to 3.97Zn mg/100g . Oat contained the highest of Mg, P, K and Fe, while nectarine contained the highest of K .On the other hand date palm contained the highest of K, Na and Zn, while skim milk powder contained the highest of Ca and K. These results were in near to those reported by[29] who found Ca (107.56 mg/kg), Mg (54.62 mg/kg), K (83.58 mg/kg), Fe (4.11 mg/kg) and Zn (0.0.36 mg/kg) of oat.**Smruthi Jayarajan** [10]who found Ca (22.85 - 54.40mg/kg), Mg (24.31 -53.27 mg/kg), K (51-77.73 mg/kg), Fe (1.55-3.59 mg/kg) and Zn (0.12 -0.32mg/kg) of nectarine. A significant variability was observed for most of themajor and minor elements among the studied nectarine genotypes, which may be attributed to genotypic variability.

Table 2: Mineral Contents of nectarine, oat, date palm and skim milk powder (mg/100g on dry weight).

Minerals	Nectarine	Oat	Date palm	Skim milk powder
Calcium (Ca)	36.01±1.16	104±1.19		200±2.45
Magnesium (Mg)	29.02±1.20	57±3.12	34.00±1.16	11±1.33
Phosphorus (P)	26±2.21	523±4.16	27.27±1.05	89±2.25
Potassium (K)	81±3.15	89±3.56	42.96±1.60	165±2.63
Sodium (Na)	0	2±0.02	711.0±3.15	50±1.80
Iron (Fe)	2.28±0.05	4.72±0.20	3.42±2.16	0.05±0.01
Zinc (Zn)	0.17±0.01	3.97±0.18	3.68±0.20	0.4±0.05

3.3Sensory evaluation of weaning food nectarine and oat blends:

Data presented in Table (3) showed the sensory evaluation of different weaning food **nectarine and oat** blends. Evaluation of odor, taste, color, texture, mouth feel and overall acceptability was carried out immediately after the preparation of the mixtures. The results showed that there were significant differences between the blends in terms of odor, taste, color, texture, mouth feel and overall acceptability. However, the sensory evaluation reflected the acceptability of (B4) compared to the other blends. Where the results showed in table (3) B4 containing (nectarine 60% , oats 30% , skim milk powder 5% and date palm 5%) It gave the highest percentage of sensory acceptance compared to other mixtures. Also, there were no significant differences between B4 and the control cerelac. By comparing the results with each other, it was found that there were significant differences between B4 and the control and the rest of the mixtures B1, B2, B3 and B5.

Table 3: Sensory Evaluation of weaning food nectarine and oat blends.

Blends. No.	Odor (10)	Taste (10)	Color (10)	Texture (10)	Mouth feel (10)	Overall acceptability (10)
C (Cerelac)	$9.50^{a}\pm 0.50$	$9.50^{a}\pm 0.28$	$9.33^{a}\pm 0.25$	$9.33^{a}\pm 0.45$	$9.50^{a}\pm 0.18$	$9.43^{a}\pm 0.13$
B1	$7.00^{b}\pm 0.13$	$7.33^{c}\pm 0.35$	$7.33^{c}\pm 0.45$	$7.33^{c}\pm 0.25$	$6.67^{c}\pm 0.45$	$7.10^{d}\pm 0.15$
B2	$7.67^{b}\pm 0.47$	$7.68^{c}\pm 0.45$	$8.00^{b}\pm 0.35$	$7.67^{c}\pm 0.15$	$7.65^{b}\pm 0.33$	$7.73^{c}\pm 0.30$
B3	$8.67^{a}\pm 0.37$	$8.67^{ab}\pm 0.57$	$8.33^{b}\pm 0.18$	$8.00^{b}\pm 0.28$	$7.59^{b}\pm 0.20$	$8.20^{b}\pm 0.25$
B4	$9.17^{a}\pm 0.28$	$9.00^{a}\pm 0.18$	$9.00^{a}\pm 0.15$	$9.00^{a}\pm 0.33$	$9.17^{a}\pm 0.15$	$9.07^{a}\pm 0.15$
B5	$7.67^{b}\pm 0.45$	$8.00^{bc}\pm 0.36$	7.65^{c} 0.45	$8.17^{b}\pm 0.15$	$7.67^{b}\pm 0.25$	$7.90^{c}\pm 0.35$

3.4 Chemical composition of weaning food nectarine and oat blends (%):

The chemical compositions of the prepared blends are shown in Table (4). protein content ranged from 8.47 to 13.95, fat from 2.02 to 6.82 %, fiber from 9.31 to 10.42, carbohydrate from 74.57 to 80.67% and Energy value from374.74 to 415.46kcal/100g. The highest values in contents were observed for protein and fat in blend numbers 1 and 5 respectively while, for fiber, ash and carbohydrate in blend number 2. The results are also in agreement with that of [30]revealed that some physicochemical properties and nutritional value of prepared oat, fruits and vegetables-based baby food formulas were ranged from 85.4-92.1,1.15-2.39, 0.25-0.56, 2.49-8.3 for moisture, protein, fat and fiber respectively.

Table 4: Chemical composition of weaning food nectarine and oat blends (%).

Blends. No.	Protein%	Fat%	Fiber%	Ash%	*Carbohydrate%	Energy value (Kcal /100 g)
B1	13.95±1.25	6.82±0.50	9.31±1.16	4.66±0.19	74.57±2.06	415.46±3.15
B2	8.47±1.02	2.02±0.33	10.42±1.20	8.84±0.70	80.67±2.90	374.74±2.11
B3	11.21±0.98	4.42±0.23	9.87±0.96	6.74±0.53	77.63±2.12	395.14±2.20
B4	10.31±0.70	3.64±0.12	10.05±1.03	7.44±0.65	78.61±2.69	388.44±2.16
B5	12.13±0.45	5.23±0.20	9.68±0.90	6.05±0.45	76.59±2.70	401.95±3.19

3.5 Mineral Contents of weaning food nectarine and oat blends (mg/100g on dry weight):

Data presented in Table (5) show the mineral contents of weaning food **nectarine and oat** blends. The mineral contents ranged From 17.11 to 60.3 Ca, from 10.03 to 161.21 Mg, from 30 to 477.3 P, from 224.7 to 429.9 K, from 20.23to 24.63 Na, from 0.43 to 4.43 Fe and from 1.64 to 5.06 Zn mg/kg. B1 blendscontained thehighest level of calcium, magnesium, phosphorus, potassium, iron and zinc.On the other hand, the highest sodium content was found in B2 . Based on the previous data, diversity of food ingredientswill help to get the benefits of each component and prepare a nutritious blends. **Hossam et al.** [30]found that the mineral contents of prepared baby food

mixtures of prepared oat, fruits and vegetables-based baby food formulas were ranged From 95.73 to 115.08, from 14.57 to 25.47, from 40.54to 190.08 from 87.54 to 187.18, from 19.46to 23.54 and from 251.46 to 534.52 mg/kg for Fe, Zn, Ca, Na, Mg and K respectively.

Table 5: Mineral Contents of weaning food nectarine and oat blends blends (mg/100g on dry weight).

Blends. No.	Calcium (Ca)	Magnesium (Mg)	Phosphorus (P)	Potassium (K)	Sodium (Na)	Iron (Fe)	Zinc (Zn)
B1	60.3±2.22	161.21±3.02	477.3±3.33	429.9±4.02	21.43±0.52	4.43±0.15	5.06±0.13
B2	17.11±1.105	10.03±1.60	30±0.60	224.7±2.70	24.63±0.33	0.43±0.01	1.64±0.11
B3	38.71±2.02	85.62±1.60	253.65±2.90	327.3±3.12	23.03±0.30	2.43±0.13	3.35±0.12
B4	31.51±2.09	60.42±2.03	179.1±2.70	293.1±.96	20.23±0.23	1.77±0.09	2.78±0.20
B5	45.9±2.11	110.82±2.23	328.2±3.15	361.5±2.28	20.83±0.20	3.10±0.17	3.88±0.30

3.6 Vitamins A, Vitamins C and Vitamin E content (mg/100g) of weaning food nectarine and oat blends :

The obtained results for vitamin C, vitamin A, and vitamin E contents are shown in Table (6). Vitamin C levels are highest in B3 and B5 blends, while vitamins A are present in all blends, vitamins E contents of B1 and B3 blends. The table shows the high content of the mixtures of vitamins and therefore their importance for the growth and immunity of children From the obtained results it could be noticed that the formulated baby food mixture number 3 which consists of Nectarine 45% and Oats 45% had the highest level of

vitamins however, the baby food mixture number 4 which consists of nectarine 60% and oats 30% had the lowest level of vitamins C and E.

Table 6: Vitamin A, Vitamin C and Vitamin E group content (mg/100g) of weaning food nectarine and oat blends

Blends. No.	Vitamin C mg/100g	Vitamin A mg/100g	Vitamin E mg/100g
B1	4.96±0.23	99.11±2.03	1.78±0.23
B2	4.21±0.19	99.61±1.90	0.78±0.35
B3	6.96±0.70	98.45±2.11	3.1±0.60
B4	2.49±0.16	100.0±2.20	Nil
B5	6.83±0.61	100.0±2.23	Nil

3.7 Vitamin B1, Vitamin B3, Vitamin B6 and Vitamin B9 Group Content (mg/100g) of weaning food nectarine and oatblends:

Results in Table (7) showed the vitamin B content of the different blends.The Thiamine highest levels of content were (B1,B3 and B4) while Niacin highest levels of content were (B2,B3 and B5),Pyroxidine highest levels of content were (B1), Folic acid highest levels of content were (B1,B2,B3 and B5),

Table 7: Vitamin B1, Vitamin B3, Vitamin B6, and Vitamin B9 Group Content(mg/100g) of weaning food nectarine and oatblends:

Blends. No.	VitaminB1 (Thiamine) mg/100g	VitaminB3 (Niacin) mg/100g	Vitamin B6 (Pyroxidine) mg/100g	Vitamin B9 (Folic acid) mg/100g
B1	2.05±0.14	1.61±0.01	0.20±0.02	6.63±0.20

B2	0.84±0.20	11.02±0.54	0.09±0.10	23.16±1.16
B3	1.45±0.10	4.65±0.23	0.03±0.05	17.08±1.05
B4	1.14±0.13	0.06±0.01	0.005±0.04	11.90±1.12
B5	0.64±0.18	7.53±0.03	0.05±0.23	18.81±1.05

3.8Total phenol compounds flavonoids and antioxidant activity of weaning food nectarine and oatblends:

Data presented in Table (8) showtotal phenol , total flavonoids and antioxidant activity DPPH of weaning food nectarine and oat blends. From the obtained results it could be noticed that B1 which consists of (oats 90% , powdered milk 5% and date palm 5%) had the highest level of total phenol (19.52mg/g) and B2 which consists of (nectarine 90% , powdered milk 5% and date palm 5%) had the highest level oftotal flavonoid (182.75 mg/100g) and on the other hand B4 which consists of (oats 30% , nectarine 60%, powdered milk 5% and date palm 5%) had the highest level ofantioxidant activity DPPH (87.30 %). Observing the results, we find that all blends are rich in total phenol compounds and total flavonoids and Improved antioxidant activity DPPH. **Smruthi Jayarajan1 *et al.***[10].who foundthat nectarines are rich in antioxidants who found total phenol ranged from 27.93 to 38.16 mg/g.

Table 8: Total phenol compounds flavonoids and antioxidant activity of weaning food nectarine and oatblends.

Blends. No.	Total phenol Mg gallic/g	Total Flavonoid Mg Qurcetin/g	DPPH %

B1	19.52	39.75	74.16
B2	13.54	182.75	77.80
B3	8.15	177.75	86.90
B4	6.46	39.65	87.30
B5	11.11	84.63	78.33

3.9 Microbiological Testing of of weaning food nectarine and oatblends:

The total bacterial and Yeast & Mold counts ofthe prepared blends are shown in Table (9). The resultsreported that total bacterial and Yeast & Mold countswere not detected at zero time of blends preparation.While, after 48 hours of storage at a temperature of 5°Cthe total bacterial and Yeast & Mold counts ranged from 4X10 to 7X10 and from ND to 3X10 cfu/gm respectively.However, after 96 hours of storage at 5°C the totalbacterial and Yeast & Mold counts ranged from 6X10 to8X10 and from 3X10 to5X10 cfu/gm respectively. From the obtained results in table 9 it could be noticed that B4 which consists of (Oats 30% , Nectarine 60% ,Powdered milk 5% and Date palm 5%.) had the highest level oftotal bacterial and Yeast & Mold counts, on the other hand and B1 which consists of (oats 90% , powdered milk 5% and date palm 5%) had the highest level of total bacterial and Yeast & Mold counts.

The formulated weaning food were prepared without any heat treatments to preserve the nutritional component from being lost or reduced. Accordingly

the results suggest that feeding of freshly prepared mixtures is thebest way for getting the benefits and assuring the quality and safety of mixtures.

Table 9: The Total Bacterial and Yeast &Mould Counts of weaning food nectarine and oatblends (cfu/gm)

Blends. No.	Zero Time		48 hours		96 hours	
	T.C	Y&M	T.C	Y&M	T.C	Y&M
B1	ND	ND	$7X10^1$	$3 X10^1$	$8 X10^1$	$5 X10^1$
B2	ND	ND	$5 X10^1$	$2 X10^1$	$6 X10^1$	$4 X10^1$
B3	ND	ND	$5 X10^1$	$1 X10^1$	$6 X10^1$	$4 X10^1$
B4	ND	ND	$4X10^1$	ND	$5 X10^1$	$3 X10^1$
B5	ND	ND	$6X10^1$	$1 X10^1$	$7 X10^1$	$5 X10^1$

CONCLUSION

The present study aimed to formulate differenthomemade complementary baby food mixtures forweaning period fortified with Oat, Nectarine, Date palm and Skim milk powder which are rich in vitamins andminerals which are needed for healthy growth in thisimportant age period using available and cheapingredients.

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