

*Study of some habits, practices and dietary beliefs  
associated with truffles (Terfeziaceae) among  
Saudian females*

**Rehab Raafat Abdel Razek Mohamed Al-Sabbagh**

Assistant Professor of Nutrition and Food Sciences - faculty of  
Science and Arts - Northern Border University, Saudi Arabia

***Abstract***

This study was conducted to find out some of the food habits, practices and beliefs followed when choosing, buying, preparing, preserving and cooking truffles (Terfeziaceae).

Demographics (age, educational level and monthly income) and the second part of the questionnaire deals with questions related to truffles such as preferred types of them, preferred pictures to buy, reasons for preferring truffles, methods of dealing after purchase, methods of cleaning and preparation for cooking, methods of preservation and additives that are added during cooking, and the third part includes questions about some related food beliefs. By eating truffles, the results showed that 80% of those who answered the questionnaire were between the ages of 15-29 years, and 70% of the study sample had university education. (92%) and that there is a significant relationship ( $p = 0.003$ ) between the educational level and the selection of fresh truffles, and there is a relationship ( $p = 0.009$ ) between the working stage Watering and choosing ripe truffles are among the considerations when buying.

There is a high significant ( $p = 0.000$ ) between the educational level and the washing and cooking of the truffle, and less significant  $p < 0.05$  ( $p = 0.02$ ) between the level of education and

washing and cutting the truffle before peeling it, and the blanching method was one of the most preferred methods of cooking. The sample (83%) also found a significant relationship ( $p = 0.008$ ) between the educational level and the belief that drinking cold water after eating truffles is unhealthy and that nearly half of the sample believe that truffles are a substitute for meat and that eating them in raw form causes poisoning and (59%) They believe that advertising plays a role in the rise in truffle prices. In conclusion, we recommend that appropriate truffle handling practices be followed before using them in cooking and preserving.

**Keywords:** habits, practices, food beliefs, truffles, Rafha, Saudi Arabia

### ***Introduction***

The truffle is known as a potato tuber-like fungus, round in an irregular way, with a skin on it Holes and recessed holes, and the smallest size of a truffle is the size of a nut, and the largest size is the size of a large orange. There are about 15 types of truffles, and most types of Arab truffles that come from The Arabian Peninsula includes a whitish truffle known as (Al-Zubaidi) nivea Tirmania. The other is reddish and is known as claverviterfezia. It is more expensive than the mulatto truffle, and the European truffle is the most common type of truffle. It is whitish, and there is another type of black truffle, which is more expensive than the mulatto truffle. (**Roux, et al., 1999**)



Truffles are the subterranean fruiting bodies of *Tuber* (Ascomycotina, Pezizales), a mycorrhizal genus of fungi that requires host plants and excellent environmental conditions for development (*Hilszczańska et al., 2019*). The word truffle comes from the Latin term *tuber*, meaning mass, which later turned into *tuber* (*Simpson and Weiner, 1989*). The Plutarch first concept that Truffles originated from lightning strikes due to the fact the stem and root have been now not visible; thus, making the truffle's beginning hard (*Osejcie, 2014*).

Truffle has a very complicated life cycle, requiring many steps: beginning via spreading and germination of spores, observed through mycelium production, contact with the host root, formation of the fungal mantle and the Hartig net, and development of extraradical mycelia and fruit bodies.

The development of fruiting bodies relies upon on the development of mycorrhizae, mutualistic symbioses between the truffle mycelium and the roots of gymnosperms and angiosperms (*Rossi et al., 2000*). The distributions of truffles are globally wide

## **Rehab Raafat Abdel Razek Mohamed Al-Sabbagh**

---

however closely cultivated in Europe, Asia, North Africa, and North America (**Freedman, 2000**).

Truffles are composed of excessive antioxidants such as vitamin A and C,  $\beta$ -carotene, and phenolic compounds. These homes of tarts assist scavenge peroxy radicals and chelate ferric ions as nicely as decreasing lipid peroxidation, which is of exceptional significance in therapeutics (**Robaszkiewicz et al., 2010**). Truffles are regarded to be one of the oldest ingredients recognised for their dietary value, in particular when in contrast with meat and fish (**Al-Delaimy, 1977**). Furthermore, truffle aqueous extract is used as a people medicinal drug in Iraq, Saudi Arabia and Eastern Jordan to ameliorate eye illnesses (**Janakat et al., 2004**).

Truffles are healthful meals that are low in energy and fats however prosperous in vegetable proteins. Their protein content material is greater than that of most vegetables, with amino acid composition having related quantity to that of animal proteins (**Danell and Easker, 1992**). They show up to be a properly supply of nutritional vitamins B, C, and minerals (**Murcia et al., 2002**). Few human beings have tasted an genuine truffle, this ought to be due to the price and the lack of availability of the product (**Freedman, 2000**). Prices of the distinctly esteemed truffle species, for example, white truffle (*Tuber magnatum* Picco) and black truffle (*Tuber melanosporum* Vittad.), can even reach 2000–3000 Euro per kilogram (**Pieroni, A 2016**).

The aim of the research is to study some of the habits, practices and food beliefs used when choosing, buying, preparing, preserving and cooking truffles among Saudian females in Rafha community - Kingdom of Saudi Arabia.

## ***Materials and Methods***

The research was designed to study some of the customs, practices and dietary beliefs followed when choosing, buying, preparing, preserving and cooking truffles in the Rafha community Kingdom of Saudi Arabia.

Truffles are found in Saudi markets in the winter, when they are in the desert and are accepted by people.

The sample size is 100 Saudian females who participated in the questionnaire via the Internet at random and were divided into groups according to age, educational level and income.

An electronic questionnaire was designed from Google Forms as the most appropriate method of data collection (**Creswell, 2014**) which was designed and published on social networking sites (snap) randomly. Since the use of this method increases the validity and reliability of the data collected (**O'Dwyer&Bernauer, 2013**).

The questionnaire was designed into three parts so that the first part includes the demographic data of the participants and includes (age - educational level - income).

The educational level was divided according to the actual testimony of the participants and the income was divided according to the given data. The second part includes food habits and practices related to truffles, and some of the questions contained in this part identify the preferred types of truffles, reasons for preference, preferred images for purchase, purchase considerations, methods of cleaning and preparation, methods of cooking and preservation at

home, and the third part includes some nutritional beliefs associated with truffles in terms of eating Truffles are healthy and drinking cold water after eating is harmful to health. Truffles are an alternative to some nutrients (meat and chicken - vegetables and fruits - milk and its derivatives - carbohydrates). The role of advertising in the rise in truffle prices

### **Statistical analysis**

Statistical data analysis (*Kotz, et al.; 2006*) was entered into a computer and analyzed using the IBM SPSS version 20.0 software package (Statistical Package for the Social Sciences).. (Armonk, NY: IBM Corp.) (*Kirkpatrick and Finney, 2013*) Qualitative data were described using Mean $\pm$ SE was conducted to test the differences in the demographic variables and the dietary practices and beliefs of the participants. The significance of the obtained results was judged at the 5% level, as the results with a value of  $P < 0.05$  were considered statistically significant

## ***Results and discussion***

Table (1) shows Percent distribution of Saudian females according to demographic characteristic, (80%) of the participants ranged in age (15-29 years), and (70%) had university education, and (79%) of them had a monthly income ranging between 1000 < 3000Saudi riyals

Table (2) shows Percent distribution of Saudian females according to habits and practices associated with truffles, and the finding of the participants most preferred types of truffles is Zubaidi(87%), and that (92%) prefer it to its good taste and (66%) due to its nutritional value, and the chemical analyzes that were conducted indicate .On the Zubaidi variety, it contains more than 25% of its dry weight in protein and contains most of the amino acids, fats,

fibers and minerals, making it one of the well-known tubers (**Sawaya et al., 1986**). It was found that (84%) of the sample preferred the local Saudi truffles, where it was found **Hussain and Ruqaie, 1999**) that Saudi truffle contains moisture (75.21 - 79.38%), protein (19.59 - 27.18%), fat (2.81 - 7.42%), crude fiber (7.81-14.89%) ash (4.33-6.39%) and ascorbic acid. 0.7 5.10 mg / 100 g) also contains large amounts of potassium and phosphorous and medium amounts of calcium, magnesium, iron, copper, zinc, manganese and sodium, and reports showed that truffles contain all the essential amino acids. It was found that (92%) of Saudian females prefer fresh truffles, followed by frozen (19%), and this is consistent with (الرحمة, 2000), where the majority of the participants (94%) indicated their choice of fresh truffles, followed by their choice of frozen truffles by (6.5%) and that (69%) of the participants reject canned truffles. Where (**Hall, et al., 2002**) explained that white truffles can be sold in closed cans, but its flavor changes, and therefore the canned and preserved truffles are less valuable and much less than fresh truffles, and (56%) refuse frozen and dried, and this agrees (**Ekinic 2005**), which confirmed that Dehydration has a clear effect on decreasing the amount of water-soluble vitamins, especially vitamin C, niacin, riboflavin and folic acid.

Around (83%) of the participants from their first considerations are the degree of maturity when buying truffles. It was found in the study (الرحمة, 2000), that (42%) of participants tend to buy truffles based on their degree of maturity (**Boehm 1999**) indicated that immature truffles have little culinary value because they did not create the pungent smell that the consumer seeks. Followed by considerations when buying: size (81%), price (79%), color (75%), and weight (68%).

The size and shape of a truffle, the distribution of the peel, color and aroma are among the factors that determine its quality. The quality of the truffle and its geographical source are among the determining factors in determining its price (**Mencarelli, et al., 1997**) Because of the importance of cleaning truffles, it became clear

## **Rehab Raafat Abdel Razek Mohamed Al-Sabbagh**

---

that (76%) of the sample performed the process of soaking truffles and then washing them with water and a special brush, and this corresponds to the study (الرحمة, ٢٠٠٠), where it was found that (56%) of the participants see the necessity of soaking the truffles in water and then removing the dust with running water and a sponge, and this is consistent with what he mentioned **Al Taie (1985)** on how truffles are prepared in the state of Oman after they are brought and washed to remove mud and sand .

One of the methods that the participants consider after buying truffles and refers to good practices is that (74%) of them wash, peel and store them, and that (70%) cook them directly, and this is consistent with the study (الرحمة, ٢٠٠٠), where (41.5%) of the participants wash, peel and distribute them in several bags.

According to the consumed quantity and that (40.5%) prepare and cook it directly, as it turns out that (43%) of the participants do not store truffles at room temperature, but rather they are kept in the freezer.

Of the dietary habits followed in preparing truffles before cooking them, it was noted that the habit of washing and peeling truffles and then cooking them was the most used method with a percentage of (83%), while the method of washing and cutting truffles and cooking them without peeling obtained the lowest percentage in preparation and cooking (14%). The good thing is that half of the participants (50%) denied removing the peel and cutting before washing, while some wrong habits appeared, namely removing the peel from the truffle, washing it and then cutting it at a rate of (51%). Among the good eating habits is eating truffles when they are in a ripe form, as it was found that (93%) of the study sample eat it in a fully ripe form, and that (82%) refused to eat it in a raw form, and that (63%) refused to eat it in a semi-cooked form. Both (**Nilsson et al.**,



**1995) (Aprea et al., 2007)**Truffles are used raw or quickly cooked, depending on the nature of the community and its food habits.

Of the images of keeping truffles in the home freezer, it was found that more than half of the participants (56%) preserve them in raw form before cooking and that (51%) deny keeping them in the freezer in cooked form, and 44% of the sample denied keeping truffles in the freezer in half-cooked form and this Agrees with **(Al Ansari 1994 )**that frozen samples do not negatively affect the flavor of the fungus, as they are soft to the touch, as the truffles are frozen after being peeled, cleaned and boiled for a short period. In terms of preparing truffles for cooking, it was found that 63% of the participants prefers to cut truffles into medium-sized pieces before cooking them, followed by 48% who prefer to cook them as they are, and (38%) of the participants denied cutting them into slices.

The most common cooking methods used in cooking truffles is the boiling method (83%), followed by roasting (44%), frying in butter (42%), and finally the casting method (27%). This differs from the study **(الرحمة, ٢٠٠٠)** in Riyadh, where the results showed that the most Cooking for truffles is the casting, followed by the method of cooking in water (boiling) and then grilling over charcoal. Khalid 2006 mentioned that desert truffles are cooked in many ways, ranging from boiling in camel milk to frying in butter. it was found that (77%) of the participants add table salt only during cooking and that (64%) do not add spices and salt to the truffle. This differs from the **study( الرحمة, ٢٠٠٠)** in Riyadh, where the participants showed that (67.5%) prefer to add spices and salt and that (82%) of them do not add hot sauce and (69%) add butter to truffles

Table (3) shows some nutritional beliefs associated with truffles among the study participants ,one of the main factors that determine the appetite for eating is the nutritional beliefs. One of the nutritional beliefs associated with eating truffles is that it is healthy.

## Rehab Raafat Abdel Razek Mohamed Al-Sabbagh

---

(79%) of the participants answered agreeing that truffles are healthy and this agrees (*Fukushima2000*); (*Miriam et al., 2006*), where fungi are a good source of proteins, digestible fiber, vitamins and minerals, and they have a low fat content, and 80 g of mushrooms is equivalent to about a portion of vegetables. Also (54%) of the participants denied their belief that drinking cold water after eating truffle is harmful to health, and this agrees with the study (الرحمة, ٢٠٠٠), where (57.5%) denied this belief

Among the nutritional beliefs associated with eating truffles is that more than half of the participants (63%) believe that it is an alternative to meat and chicken. The study of (تكوروي ٢٠٠٠) concluded that the dietary belief that the mushroom protein (Claveryi Terfezia) could replace meat is incorrect. In a study by (*Sawaya, et al., 1985*) to study and analyze two types of truffles, which are *Tirmania Nivea* and *Terfezia Claveryi*, it was clear from the results that both types contain all the essential amino acids in appropriate quantities, including the amino acids Leucine and Lysine, especially *Terfezia* in *Claveryi*. In *Nivea Tirmania*, it was found that they contain more than 14 fatty acids in different proportions according to the difference in sex and environmental conditions.

And that (47%) believe that it is a substitute for starches, and that (61%) do not agree that it is an alternative to milk and its derivatives. And (56%) do disagree that it is a substitute for vegetables and fruits. It is also a food belief that eating it raw causes poisoning, (60%) of the participants answered in agreement that eating it raw causes poisoning, and this agrees (*Freedman and Freedman, 1984*), as it is not recommended to eat mushrooms raw, as the uncooked mushroom tissues decompose. Badly during digestion, which deprives us of its nutritional contents, (51%) agreed that eating it after the end of the harvest season causes poisoning.

It was found that one of the reasons for not eating truffles is its high price, as (80%) agreed with approval that high prices were among the reasons for not eating them. (**Harrison 2006**) that due to the high price of truffles, they are used economically and can be obtained fresh or preserved in a light saline solution. (الرحمة, ٢٠٠٠), also confirms that the residents of the Najd region in the Kingdom of Saudi Arabia accept to buy truffles in a large way, which leads to an exaggeration in their prices, due to their scarcity and hardship search for it .

Belief in the role of the media in the rise in the prices of truffles, it was found that (76%) answered with approval that the media have a role in the rise in prices, and this is consistent with the study (الرحمة, ٢٠٠٠), where it was found that (32.5%) strongly believed that the media had a role and influence in the rise its price

Table (4) shows the relationships between some practices and habits associated with eating truffles and the age groups. It was found that the relationship between eating local truffles and the age group  $P = 0.6$  which is in contradiction to the study (الرحمة, ٢٠٠٠) where a statistically significant relationship (0.001) was found in his study between age groups and eating truffles. It also found a relationship  $p = 0.6$  between age and the good taste of truffles, and this contradicts the study of (الرحمة, ٢٠٠٠), where there was an inverse correlation between age and good taste that was statistically significant (0.004). It was found in the age group 30-39 years that 100% prefer truffle for its good taste compared to (80%) of the same age group prefer truffle for its high nutritional value, as well as (80%) of women aged 40-49 years and this is where the white truffle Pico Magnum Tuber is of nutritional value High for its strong and distinctive smell, especially when it is fresh (**Harrison 2006**). One of the most preferred age groups to buy fresh truffles was 30-39 years with a rate of (93.3%), followed by the age group 15-29 years with (92.5%) and (80%) for the age group 40-49 years, and all age groups

## Rehab Raafat Abdel Razek Mohamed Al-Sabbagh

---

do not prefer to buy canned, frozen and dried truffles. (*Ekinici, 2005*) that drying has a clear effect on decreasing the amount of water-soluble vitamins, especially vitamin C, niacin, riboflavin and folic acid.

It was also found that (85%) of the participants with the age group 15-29 years among their considerations when buying truffles is the degree of maturity, as well as (80%) of the age group 30-39 years and 60% of the age group 40-49 years, and there was a high statistical significance  $p = 0.009$  between the degree of truffle maturity as one of the purchase considerations and the age stage, and that (86.6%) of 30-39-year-olds take into account the color of truffles, and that (93.3%) of participants of the same age consider "size" when buying truffles (*Mencareli et al., 1997*) that the size and shape of the truffle and the distribution of the crust, color and smell are among the most important factors that determine its quality and quality

Table (5) shows the relationship between some practices related to truffles and the educational level of the study participants. It was found that (95.7%) of those with a university education prefer to buy fresh truffles, (64.2%) of those with a university education, (81.4%) of those with Undergraduate do not prefer canned truffles, and 66.6% of those with postgraduate education do not like canned truffles. All the participants do not prefer buying frozen truffles as well as dried and I found  $P.VALE = 0.003$  between the pictures of buying preferred truffles (fresh) and the level of education. This means that they are aware that the quality of food is affected by prepared storage or any kind of food handling method by housewives in The house (*FAO, 1992*) and from the forms of keeping truffles at home in the freezer, it was found that the relationship between keeping truffles in raw form and education level  $P = 0.5$  and the relationship between keeping truffles in half-cooked form and education level  $P = 0.08$  and the relationship between keeping truffles in cooked form and the level of education Education  $P = 0.2$

Table (6) shows the relationship between some practices related to truffles (considerations before cooking, preparation for cooking and additions) and the educational level of the participants. It was found that there is a relationship  $p = 0.02$  between the educational level of the participants and washing and chopping truffles before peeling, among the considerations that take place before cooking truffles. This is consistent with what was mentioned by (*Al Taie, 1985*) about how truffles are prepared in the State of Oman after they were brought and washed to remove mud and sand, and a high level of morale  $p = 0.000$  was found between the level of education, washing truffles and cooking as they are, as it was found that (100%) of the studies The higher education cooks immediately after purchase, compared to (71.4%) of those with university education and (62.9%) of those with undergraduate, and that (44.4%) of those with undergraduate do not keep truffles at room temperature, and (66.6%) of those with graduate studies keep truffles in the refrigerator and freezer until the time of use, and they do The process of washing and peeling before storage, and this is evidence of the existence of many good food practices and habits while preserving truffles, and this is consistent with the study of (*Jevsnik et al., 2008*)

In terms of methods of cleaning truffles before use, it was found that (74%) of undergraduate females remove dust from their truffles with water, and (74.2%) of university-educated saudian female remove dust with water and a brush, and this is what is recommended by (*Pilz, 2005*)(*Maxwell*). , 2005) the importance of removing any dirt on the truffles before eating them directly, and they must be washed with water and a brush, and the outer surface should be cleaned .And there was a significant relationship  $p = 0.05$  between the level of education of the participants and cutting the truffle into medium pieces, as it was found that (65.7%) of those with university education and (100%) of those with graduate studies follow this practice, and this is consistent with the study (*الطوى, ٢٠٠٩*) in that

## Rehab Raafat Abdel Razek Mohamed Al-Sabbagh

---

more than half of the participants (65.7%) They prefer to cut truffles into medium-sized pieces before cooking, and there was a relationship  $p = 0.03$  between education level and truffle slices, as it was found that (38.5%) of saudian femaleswith university education refuse to cut truffles into slices in preparation for cooking.In terms of the additions that are added to truffles during cooking, there was a relationship  $p = 0.02$  between education and the addition of chili while cooking truffles. It was found that (88.8%) of those with Undergraduate and (82.8%) of those with university education reject this practice, and that the percentage of those who add chili is (11.4%), which is close to a study (الطوى, ٢٠٠٩) in that about (12.5%) of the participants add hot sauce

Table (7) shows the relationship between some nutritional beliefs associated with eating truffles and the educational level of the participants. We find that (81.4%) of those with university education and (100 %) of those with postgraduate agreed that eating truffles is healthy and this is consistent with (**Bokhary andParvez 1993**) The truffles contain an important amount of essential amino acids in addition to any mineral salts, especially phosphorous and potassium. There was highly significant ( $p = 0.008$ ) relationship between the level of education and the belief that drinking cold water after eating truffle is harmful to health, as it was found that (58.5%) of those with university education and (100%)of those with postgraduate did not agree with this belief.

Regarding the belief that truffle is an alternative to meat, (67%) of the participants of those with university education agreed that truffle was an alternative to meat, and (57%) of the participants did not agree that it was a substitute for vegetables, and this agrees (**Ahmed et al., 1981**) that truffles are one of the foods that are highly valued for being rich in proteins and that their protein content is higher than vegetables. (100%) of graduate and (44.2%) university-educated female agree that truffles are an alternative to

carbohydrates, and this agrees (*Bokhary and Parvez, 1993*) that truffles are rich in carbohydrates. More than half of the participants (62.8%) of those with university education, and (100%) of those with graduate studies agreed that eating raw truffles may be considered poisonous. It was mentioned (*Nilsson et al., 1995*), (*Apra et al., 2007*) that there are many dietary habits used in preparing and cooking truffles, and that this depends on the nature of truffles and the community. It may be used raw or cooked quickly. In terms of the reasons for not eating truffles the high price, (88.8%) of those with Undergraduate education agreed, and (75.7%) of those with university education agreed that not eating truffles is the expensive price, and this agrees (*Bokhary, 1987*) that the truffles that were consumed by Pharos 3000 years ago it is still an important dish in many countries, and is usually associated with the wealthy due to its high and exorbitant price. And found a significant relationship ( $p = 0.05$ ) between the educational level of the participants and that one of the reasons for not eating truffle is the existence of cheaper alternatives, where (100%) of those with graduate studies agreed but (52.8%) of those with university education rejected this belief and this is consistent with what was mentioned (*Nina 1985,*) where eating Truffles are a luxury food in Iraq and are served either boiled or fried

### ***Conclusion***

The results of this study showed that the level of dietary habits and practices associated with eating truffles was moderate for the majority of the study participants. And it is not recommended to eat truffles raw, as the uncooked mushroom tissues degrade poorly during digestion, which leads to deprivation of its nutritional contents. It is recommended to increase knowledge of the sound foundations of nutrition, methods of cooking and sound preservation to preserve the nutritional value, as ignorance of the sound foundations of nutrition often leads to malnutrition.

**Table (1) :** Percent distribution of Saudian females according to Demographic characteristic(N=100)

Characteristic	Number	Percentage of the participants (%)
Age group		
15-29 y	80	80%
30-39 y	15	15%
40-49 y	5	5%
>50	0	0
Educational level		
Primary	0	0
Undergraduate	27	27%
University	70	70%
Postgraduate	3	3%
Income level		
1000<3000 SR	79	79%
3000<6000 SR	13	13%
6000<9000 SR	5	5%
>9000 SR	3	3%

SR: Saudi riyals



**Table(2) : Percent distribution of Saudian females according to habits and practices associated with truffles**

habits and practices	Yes		No		Sometimes	
	No.	%	No.	%	No.	%
One of your favorite truffles						
Al Khulas	32	32%	35	35%	33	33%
Zubaidi	87	87%	7	7%	6	6%
Available in the market	28	28%	37	37%	35	35%
Reasons to prefer truffles						
good taste	92	92%	7	7%	1	1%
Nutritional value	66	66%	17	17%	17	17%
Preference to buy truffles according to extraction						
locally	84	84%	11	11%	5	5%
imported	14	14%	58	58%	28	28%
Available locally or imported	28	28%	48	48%	24	24%
Pictures of preference to buy truffles						
fresh	92	92%	5	5%	3	3%
canned	5	5%	69	69%	26	26%
the freezer	19	19%	56	56%	25	25%
dryer	19	19%	56	56%	25	25%
all the above	14	14%	65	65%	21	21%
What to consider when buying truffles						
the weight	68	68%	17	17%	15	15%
degree of maturity	83	83%	12	12%	5	5%
the price	79	79%	8	8%	13	13%
the size	81	81%	9	9%	10	10%
the color	75	75%	10	10%	15	15%
Methods for cleaning truffles to prepare them for use						
Dust is removed from it with water	71	71%	20	20%	9	9%
Remove dust with water and brush	72	72%	16	16%	12	12%
Soak and then wash with water	63	63%	26	26%	11	11%
Soak, then rinse with water and brush	76	76%	15	15%	9	9%
What to take into account after buying truffles						
cooking directly	70	70%	17	17%	13	13%
Store at room temperature until use	36	36%	43	43%	21	21%
Keep in the refrigerator	40	40%	39	39%	21	21%

## Rehab Raafat Abdel Razek Mohamed Al-Sabbagh

until use						
Keep in the freezer until use	33	33%	42	42%	25	25%
Wash, peel and store	74	74%	16	16%	10	10%
Before cooking truffles, take into account the following						
Washing, peeling, then cooking	83	83%	14	14%	3	3%
Washing and cutting without peeling	14	14%	79	79%	7	7%
Peeling, washing and cutting	51	51%	34	34%	15	15%
Peeling, cutting and washing	35	35%	50	50%	15	15%
Washing then cooking as is	22	22%	70	70%	9	9%
One of my favorite pictures of eating truffles						
in a raw form	15	15%	82	82%	3	3%
in a mature form	93	93%	6	6%	1	1%
Half cooked	17	17%	63	63%	20	20%
Pictures of keeping truffles at home (in the freezer)						
in a raw form	56	56%	32	32%	12	12%
In cooked form	33	33%	51	51%	16	16%
Half cooked	33	33%	44	44%	23	23%
Preparing truffles for cooking						
Cook it as is	48	48%	42	42%	10	10%
Cut into medium sized pieces	63	63%	19	19%	18	18%
cut into slices	31	31%	38	38%	31	31%
One of my favorite cooking methods						
chard	83	83%	9	9%	8	8%
barbecue	44	44%	42	42%	14	14%
casting	27	27%	53	53%	20	20%
frying in butter	42	42%	38	38%	20	20%
Additives that are added to truffles during cooking						
salt	77	77%	15	15%	8	8%
Table salt and spices	24	24%	64	64%	12	12%
Hot sauce	11	11%	82	82%	8	8%
olive oil	24	24%	62	62%	14	14%
butter	69	69%	16	16%	15	15%

**Table (3) : Percent distribution of Saudian females according to nutritional beliefs associated with truffles**

Nutritional beliefs	Agree		disagree		neutral	
	No.	%	No.	%	No.	%
Is eating truffles healthy?	79	79%	0	0	21	21%
Is drinking cold water after eating truffle harmful to health?	17	17%	54	54%	29	29%
The truffle is a substitute for						
Meat and chicken	63	63%	22	22%	15	15%
fruits and vegetables	24	24%	56	56%	20	20%
Milk and dairy products	21	21%	61	61%	18	18%
Carbohydrates	47	47%	32	32%	21	21%
Truffles are considered poisonous when						
eaten raw	60	60%	24	24%	16	16%
Harvest season is over	51	51%	21	21%	28	28%
One of the reasons not to eat truffles						
high price	80	80%	12	12%	8	8%
Not available in abundance	92	92%	6	6%	2	2%
There are cheaper alternatives	30	30%	49	49%	21	21%
Believing that advertising and media play a role in the rise in truffle prices	76	76%	14	14%	10	10%

## Rehab Raafat Abdel Razek Mohamed Al-Sabbagh

**Table( 4):** The relationships between some practices associated with eating truffles and the age groups of the participants

some practices	age group								Total No.=100 %	Mean% ±SE	p.val ue
	15-29Y No.=80 %		30-39Y No.=15 %		40-49Y No.=5 %		>50 No.=0 %				
Preference to buy truffles according to extraction											
Locally	Yes	77 82.5	11 93.3	1 20	0 0	0 0	0 0	84 84	84 84	84.95± 2.9	0.609
	No	1 12.5	0 0	1 20	0 0	0 0	0 0	11 11	11 11	10.87± 4	
	Some- times	1 5	1 6.66	0 0	0 0	0 0	0 0	5 5	5 5	4.16± 1.4	
imported	Yes	11 13.7	1 6.66	2 40	0 0	0 0	0 0	14 14	14 14	18.60± 7.3	0.308
	No	48 60	9 60	1 20	0 0	0 0	0 0	58 58	58 58	49.5± 9.8	
	Some- times	21 26.2	5 33.3	2 40	0 0	0 0	0 0	28 28	28 28	31.88±3	
Available locally or imported	Yes	22 27.5	4 26.6	2 40	0 0	0 0	0 0	28 28	28 28	30.52±3	0.781
	No	37 46.2	9 60	2 40	0 0	0 0	0 0	48 48	48 48	48.56±4	
	Some- times	21 26.2	1 6.66	1 20	0 0	0 0	0 0	23 23	23 23	18.97±4	
Reasons to prefer truffles											
good taste	Yes	47 58.7	15 100	4 80	0 0	0 0	0 0	66 66	66 66	76.18± 9	.605
	No	6 7.5	0 0	1 20	0 0	0 0	0 0	7 7	7 7	8.62± 4.1	
	Some- times	1 1.25	0 0	0 0	0 0	0 0	0 0	1 1	1 1	0.56± 0.3	
Nutritional value	Yes	50 62.5	12 80	4 80	0 0	0 0	0 0	66 66	66 66	72.12± 4.6	0.321
	No	16 20	0 0	1 20	0 0	0 0	0 0	17 17	17 17	14.25± 4.8	
	Some- times	14 17.5	3 20	0 0	0 0	0 0	0 0	17 17	17 17	13.62± 4.5	
Pictures of preference to buy truffles											
fresh	Yes	74 92.5	14 93.3	4 80	0 0	0 0	0 0	92 92	92 92	89.45± 3.1	0.410
	No	4 5	0 00	1 20	0 0	0 0	0 0	5 5	5 5	7.5± 4.3	
	Some- times	2 2.5	1 6.66	0 00	0 0	0 0	0 0	3 3	3 3	3.04± 1.3	
cann ed	Yes	4 5	0 00	1 20	0 0	0 0	0 0	5 5	5 5	7.5± 4.3	0.529
	No	55 68.7	11 73.3	3 60	0 0	0 0	0 0	69 69	69 69	67.76± 2.7	
	Some- times	21 26.2	4 26.6	1 20	0 0	0 0	0 0	26 26	26 26	24.71± 1.5	
the freez er	Yes	15 18.7	2 13.3	2 40	0 0	0 0	0 0	19 19	19 19	22.76± 5.8	0.727
	No	44 55	10 66.6	2 40	0 0	0 0	0 0	56 56	56 56	54.4±	

**Egyptian J. of Nutrition Vol. XXXVII No. 1 (2022)**

											5.4	
	Some-times	21 26.2	3 20	1 20	0 0	25 25	25 25	22.81± 1.6				
dryer	Yes	16 20	2 13.3	1 20	0 0	19 19	19 19	18.07± 1.6	0.969			
	No	44 55	9 60	3 60	0 0	56 56	56 56	57.75± 1.3				
	Some-times	20 25	4 26.6	1 20	0 0	25 25	25 25	24.15± 1.4				
all the above	Yes	13 16.2	0 00	1 20	0 0	14 14	14 14	12.56± 4.3	0.349			
	No	51 63.7	12 80	2 40	0 0	65 65	65 65	62.18± 8.2				
	Some-times	16 20	3 20	3 60	0 0	22 22	22 22	30.5± 9.8				
What to consider when buying truffles												
the weight	Yes	55 68.7	10 66.6	3 60	0 0	68 68	68 68	65.83± 1.9	0.599			
	No	13 16.2	2 13.3	2 40	0 0	17 17	17 17	21.63± 6				
	Some-times	12 15	3 20	0 0	0 0	15 15	15 15	12.5± 4.3				
degree of maturity	Yes	68 85	12 80	3 60	0 0	83 83	83 83	77± 5.7	.009**			
	No	10 12.5	0 0	2 40	0 0	12 12	12 12	16.12± 8.4				
	Some-times	2 2.5	3 20	0 0	0 0	5 5	5 5	6.87± 4.4				
the price	Yes	65 81.2	11 73.3	3 60	0 0	79 79	79 79	73.38± 4.7	0.683			
	No	5 6.25	2 13.3	1 20	0 0	8 8	8 8	11.88± 3				
	Some-times	10 12.5	2 13.3	1 20	0 0	13 13	13 13	14.7± 1.7				
the size	Yes	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.656			
	No	7 8.75	1 6.66	1 20	0 0	9 9	9 9	11.10± 3				
	Some-times	73 91.2	14 93.3	4 80	0 0	91 91	91 91	88.88± 3				
the color	Yes	60 75	13 86.6	2 40	0 0	75 75	75 75	69.15± 10	0.339			
	No	1 1.25	1 6.66	1 20	0 0	3 3	3 3	7.72± 4				
	Some-times	19 23.7	1 6.66	2 40	0 0	22 22	22 22	23.10± 6.8				

\*significant      \*\* highly significant

Values were expressed as means ±SE

## Rehab Raafat Abdel Razek Mohamed Al-Sabbagh

**Table (5):** The relationships between some practices associated with truffles and the education level of the participants

Some practices	education level			Total NO.=100 %	Mean%±SE	p.value	
	Undergra- duate NO.=27 %	university NO.=70 %	Postgra- duate NO.=3 %				
Pictures of preference to buy truffles							
fresh	Yes	23 85	17 95.7	2 66.6	92 92	86.4±6.2	0.003**
	No	1 3.7	3 4.28	1 33.3	5 5	9.62±5.9	
	Some- times	3 11	0 0	0 0	3 3	3.92±3.2	
canned	Yes	0 0	5 5.71	1 33.3	5 5	8.80±6.2	.176
	No	22 81.4	50 64.2	2 66.6	69 69	72.1±3.5	
	Some- times	5 18.5	11 30	0 0	26 26	18.96±5.2	
the freezer	Yes	5 18.5	13 18.5	1 33.3	19 19	23.0±4.4	.351
	No	15 55.5	39 55.7	2 66.6	56 56	58.9±3.2	
	Some- times	7 25.9	18 25.7	0 0	25 25	17.9±7.7	
dryer	Yes	3 11.1	10 21.4	1 33.3	19 19	19.18±4.0	.810
	No	16 59.2	38 54.2	2 66.6	56 56	58.6±2.3	
	Some- times	8 29.6	17 24.2	0 0	25 25	22.0±5.7	
all the above	Yes	5 18.5	8 11.4	1 33.3	14 14	19.5±3.8	.823
	No	17 62.9	56 65.7	2 66.6	65 65	65±1	
	Some- times	5 18.5	16 22.8	0 0	21 21	15.42±4.4	
Pictures of keeping truffles at home (in the freezer)							
in a raw form	Yes	13 48	41 58.5	2 66.6	56 56	52.8±7.8	.546
	No	10 37	21 30	1 33.3	32 32	35.7±5	
	Some- times	4 14.8	8 11.4	0 0	12 12	11.3±3.5	
In cooked form	Yes	11 40.7	20 28.5	2 66.6	33 33	44.4±9.0	.261
	No	11 40.7	39 55.7	1 33.3	51 51	42.4±6.3	
	Some- times	5 18.5	11 15.7	0 0	16 16	13±3.6	
Half cooked	Yes	7 25.9	25 35.7	1 33.3	33 33	30.38±2.4	.083
	No	8 29.6	34 48.5	2 66.6	44 44	42.9±7.4	
	Some- times	12 44.4	11 15.7	0 0	23 23	26.6±9.5	

\*significant      \*\* highly significant

Values were expressed as means ±SE

**Table (6):** The relationships between some practices related to truffles and the education level of the participants

some practices	education level			Total NO.=100 %	Mean%±SE	p.value	
	Undergra-duate NO.=27 %	university NO.=70 %	Postgra-duate NO.=3 %				
Before cooking truffles, take into account the following							
Washing, peeling, then cooking	Yes	22 81.4	08 82.8	3 100	83 83	11.4±3.8	.498
	No	4 14.8	10 14.2	0 0	14 14	10±4	
	Sometimes	1 3.70	2 2.85	0 0	3 3	3.39±2	
Washing and cutting without peeling	Yes	24 88.8	04 77	1 33.3	79 79	20.3±11.9	.029*
	No	1 3.70	11 15.7	2 66.6	14 14	72.2±10	
	Sometimes	2 7.40	0 7.14	0 0	7 7	7.26±4	
Peeling, washing and cutting	Yes	10 37	28 54.2	3 100	51 51	55.4±11.7	.387
	No	12 44.4	22 31.4	0 0	34 34	31.9±9	
	Sometimes	5 18.5	10 14.2	0 0	15 15	12.5±3.6	
Peeling, cutting and washing	Yes	9 33.3	24 34.2	2 66.6	35 35	40.4±6.5	.901
	No	15 55.5	24 48.5	1 33.3	50 50	48.5±4	
	Sometimes	3 11.1	12 17.1	0 0	15 15	10.86±2.9	
Washing then cooking as is	Yes	2 7.40	17 24.2	3 100	22 22	31.46±17.6	.000**
	No	18 66.6	01 72.8	0 0	69 69	56.1±14.2	
	Sometimes	7 25.9	2 2.85	0 0	9 9	12.35±5.4	
What to take into account after buying truffles							
cooking directly	Yes	17 62.9	50 71.4	3 100	80 80	72.4±10.9	.086
	No	5 18.5	12 17.1	0 0	17 17	14.58±3.78	
	Some-times	5 18.5	8 11.4	0 0	13 13	14.87±7.73	
Store at room temper-ature until use	Yes	8 29.6	26 37.1	2 66.6	36 36	41.26±7.27	.192
	No	12 44.4	30 42.8	1 33.3	43 43	38.26±8.14	
	Some-times	7 25.9	14 20	0 0	21 21	20.4±7.09	
Keep in the refriger-ator until use	Yes	9 33.3	29 41.2	2 66.6	40 40	41.76±7.11	.480
	No	9 33.3	29 41.2	1 33.3	39 39	36.02±1.70	
	Some-times	9 33.3	12 17.1	0 0	21 21	22.04±7.22	
Keep in the freezer until use	Yes	7 25.9	24 34.2	2 66.6	31 31	36.35±7.81	.846
	No	12 44.4	29 41.2	1 33.3	42 42	41.06±2.04	
	Some-times	8 29.6	17 24.2	0 0	25 25	22.05±5.73	

## Rehab Raafat Abdel Razek Mohamed Al-Sabbagh

Wash, peel and store	Yes	19 70.3	53 75.7	2 66.6	74 74	73.24±4.69	.384
	No	3 11.1	12 17.1	1 33.3	16 16	16.60±5.26	
	Some-times	5 18.5	5 7.14	0 0	10 10	10.08±3.59	
Methods for cleaning truffles to prepare them for use							
Dust is removed from it with water	Yes	20 74	49 70	2 66.6	71 71	72.6±4.14	.327
	No	3 11.1	16 22.8	1 33.3	20 20	19.6±4.13	
	Some-times	4 14.8	5 7.14	0 0	9 9	7.66±4.06	
Remove dust with water and brush	Yes	18 66.6	52 74.2	2 66.6	72 72	69.2±1.62	.597
	No	3 11.1	12 17.1	1 33.3	16 16	17.7±4.08	
	Some-times	6 22.2	6 8.57	0 0	12 12	12.9±4.23	
Soak and then wash with water	Yes	20 74	41 58.5	2 66.6	63 63	68.7±5.24	.596
	No	6 22.2	19 27.1	1 33.3	26 26	25.04±3.7	
	Some-times	1 3.7	10 14.2	0 0	11 11	6.15±2.86	
Soak, then rinse with water and brush	Yes	21 77.7	53 75.7	2 66.6	76 76	75.8±3.65	.838
	No	3 11.1	11 15.7	1 33.3	15 15	16.12±5.27	
	Some-times	3 11.1	6 8.57	0 0	9 9	7.954±2.05	
Preparing truffles for cooking							
Cook it as is	Yes	14 51.8	٢٢ 45.7	٢ 66.6	٤٨ 48	53.16±3.73	.929
	No	11 40.7	٢٠ 42.8	١ 33.3	٤٢ 42	40.26±1.96	
	sometimes	2 7.40	٨ 11.4	٠ 0	١٠ 10	6.5±2.66	
Cut into medium sized pieces	Yes	14 51.8	٤٦ 65.7	٣ 100	٦٣ 63	67.94±8.98	.054*
	No	3 11.1	١٦ 22.8	٠ 0	١٩ 19	11.68±4.86	
	sometimes	10 37	٨ 11.4	٠ 0	١٨ 18	20.3±7.09	
cut into slices	Yes	6 22.2	٢٢ 31.4	٣ 100	٣١ 31	43.5±15	.039*
	No	11 40.7	٢٧ 38.5	٠ 0	٣٨ 38	28.62±10	
	Some-times	10 37	21 30	0 0	31 31	27.74±7.39	
Additives that are added to truffles during cooking							
salt	Yes	20 74	٥٦ 80	١ 33.3	٧٧ 77	66.92±8.71	.258
	No	5 18.5	٨ 11.4	٢ 66.6	١٥ 15	26.36±10.2	
	Some-times	2 7.40	٦ 8.5	٠ 0	٨ 8	6.63±1.87	



## Egyptian J. of Nutrition Vol. XXXVII No. 1 (2022)

Table salt and spices	Yes	5 18.5	١٧ 24.2	٢ 66.6	٢٤ 24	31.84±9.38	.36 6*
	No	18 66.6	٤٥ 64.2	١ 33.3	٦٤ 64	56.72±7.90	
	Sometimes	4 14.8	٨ 11.4	٠ 0	١٢ 12	11.34±3.51	
Hot sauce	Yes	1 3.7	٨ 11.4	٢ 66.6	١١ 11	20.02±11.8	.021 *
	No	22 81.4	٥٨ 82.8	١ 33.3	٨١ 81	70.5±9.98	
	Sometimes	4 14.8	٤ 5.7	٠ 0	٨ 8	9.4±3.67	
olive oil	Yes	6 22.2	١٦ 22.8	٢ 66.6	٢٤ 24	32.66±8.89	.412
	No	15 55.5	٤٦ 65.7	١ 33.3	٦٢ 62	53.3±6.20	
	Sometimes	6 22.2	٨ 11.4	٠ 0	١٤ 14	13.96±4.10	
butter	Yes	19 70.3	٤٨ 68.5	٢ 66.6	٦٩ 69	68.58±1.02	.771
	No	3 11.1	١٢ 17.1	١ 33.3	١٦ 16	18.83±4.51	
	Sometimes	5 18.5	١٠ 14.2	٠ 0	١٥ 15	12.5±3.61	

\*significant      \*\* highly significant

Values were expressed as means ±SE

## Rehab Raafat Abdel Razek Mohamed Al-Sabbagh

**Table (7)** The relationships between some nutritional beliefs associated with eating truffles and the education level of the participants

some nutritional beliefs		education level			Total NO.=100 %	Mean%± SE	p.value
		Undergra-duate NO. =27 %	University education NO.=70 %	Postgr- aduate NO.=7 %			
Is eating truffles healthy?	Agree	19 70	57 81.4	3 100	79 79	82.6± 6.2	.702
	Disagree	0 0	0 0	0 0	0 0	0	
	Neutral	8 29.6	13 18.5	0 0	21 21	17.2± 6.2	
Is drinking cold water after eating truffle harmful to health?	Agree	4 14.8	10 14.2	3 100	17 17	36.5± 2	.008**
	Disagree	13 48	41 58.5	0 0	54 54	40 ±13	
	Neutral	10 37	19 27	0 0	29 29	23.2±8	
The truffle is a substitute for							
Meat and chicken	Agree	13 48	47 67	3 100	63 63	69.5± 10.9	.219
	Disagree	10 37	12 17	0 0	22 22	19± 7.62	
	Neutral	4 14.8	11 15.7	0 0	15 15	11.37± 3.7	
fruits and vegetables	Agree	6 22.2	16 22.8	2 66.6	24 24	33.9± 10.9	.517
	Disagree	15 55.5	40 57	1 33.3	56 56	50.4± 5.7	
	Neutral	6 22.2	14 20	0 0	20 20	15.5± 5.2	
Milk and dairy products	Agree	4 14.8	15 21.4	2 66.6	21 21	30.9± 11.9	.553
	Disagree	18 66.6	42 60	1 33.3	61 61	55± 7.45	
	Neutral	5 18.5	13 18.5	0 0	18 18	13.75± 4.5	
Carbohydr ates	Agree	13 48	31 44.2	3 100	47 47	59.8± 13.4	.632
	Disagree	9 33.3	23 32.8	0 0	32 32	24.5± 8	
	Neutral	5 18.5	16 22.8	0 0	21 21	15.5± 5.2	
Truffles are considered poisonous when							
eaten raw	Agree	13 48	44 62.8	3 100	60 60	67.7± 11	.593
	Disagree	7 25.9	21 30	0 0	28 28	20.9± 7	
	Neutral	7 25.9	5 7.14	0 0	12 12	11.2± 5.4	
Harvest season is over	Agree	12 44.4	36 51.4	3 100	51 51	61.7± 12.8	.546
	Disagree	6 22.2	15 21.4	0 0	21 21	16± 5.38	
	Neutral	9 33.3	19 27	0 0	28 28	22± 7.4	
One of the reasons not to eat truffles							
high price	Agree	24 88.8	53 75.7	3 100	80 80	86± 5.36	.649

## Egyptian J. of Nutrition Vol. XXXVII No. 1 (2022)

	Disagree	1 3.7	11 15.7	0 0	12 12	7.8± 3.6	
	Neutral	2 7.4	6 8.57	0 0	8 8	5.9± 2	
Not available in abundance	Agree	25 92.5	64 91.4	3 100	92 92	93.9± 2	.970
	Disagree	1 3.7	5 7.14	0 0	6 6	4.2± 1.57	
	Neutral	1 3.7	1 1.42	0 0	2 2	1.78± 0.76	
	Agree	7 25.9	20 28.5	3 100	30 30	46± 17.9	
There are cheaper alternatives	Disagree	12 44.4	37 52.8	0 0	49 49	36.5± 12.3	.053*
	Neutral	8 29.6	13 18.5	0 0	21 21	17± 6.22	

\*significant                      \*\* highly significant

Values were expressed as means ±SE

## ***References***

**Ahmed, A. Mohammad, M. and Hami, M. (1981):**

"Libyan truffles "Terfeziaboudieri Chatin" Chemical composition and toxicity " . Journal of food science. Vol. 46. 927-929

**Al-Ansari, B. (1994):**"

Celia. The Complete United Arab Emirates Cookbook. Emirates Airlines", Dubai. translated from Al-Alawi, Noura Bint Abdullah (2009) Food habits associated with eating truffle mushrooms and the effect of some of its treatments on experimental mice. Umm Al-Qura University, Kingdom of Saudi Arabia

**Al-Delaimy, K. S. (1977).**

Protein and amino acid composition of truffle. J. Can. Inst. Food Sci. Technol. 10:221-222

**Al-Taie, L. (1985):**"

Al Azaf - The Omani Cookbook". Oman Bookshop, Oman.

**Aprea, E. Biasioli, F. Carlin, S. Versini, G. Märk, T. and Gasperi F. (2007):**"

Rapid white truffle headspace analysis by proton transfer reaction mass spectrometry and comparison with solid-phase microextraction coupled with gas chromatography/mass spectrometry" 21(16):2564-72

**Boehm,A. (1999):"**

The hunt for the white truffle" . Los Angeles Times  
Syndicate.by CNN.www.urbani.com

**Bokhary, H. (1987):**

Desert truffles "Al-Kamah" of the kingdom of Saudi Arabia. 1.  
Occurrence,Identification and distribution Arab Gulf". J. Sci.  
RES.Vol.2.p: 245-255

**Bokhary, H. A. and Parvez, S. (1993).**

Chemical composition of the desert truffles Terfeziaclaveryi. J.  
Food Compos. Anal. 6:285-293

**Creswell, J. W. (2014).**

Research design: Qualitative, quantitative, and mixed  
methods approaches. Thousand Oaks, CA: SAGE  
Publications

**Danell, E. and Eaker, D. (1992).**

Amino acid and total protein content of the edible mushroom  
Cantharelluscibarius. J. Sci. Food Agric. 60:333-337.

**Ekinci,R. (2005):**

The effect of Fermentation and Drying on the WaterSoluble  
Vitamin Content of Tarhana, a Traditional Turkish Cereal  
Food. Food-Chemistry ". 90 (1-2): 127-132

**Food and Agriculture Organization [FAO] & World Health Organization [WHO]. (1992).**

Nutrition and development: A global assessment. Preceding the International Conference on Nutrition. Rome: FAO/ WHO

**Freedman, L. (2000).**

Wild about mushrooms: The mycological society of San Francisco cookbook. The Mycological Society of San Francisco.<http://www.mykoweb.com/cookbook/index.html>

**Freedman,L and Freedman,W. (1984):**

Wild About Mushrooms, The Cookbook of the Mycological Society of San Francisco ". Society of San Francisco

**Fukushima, M. (2000):**

LDL receptor mRNA in rats is increased by dietary mushroom (*AgaricusBisporus*) fibre and sugar beet fibre". Journal of Nutrition 130: 2151-2156

**Hall, L. Dixon,R. Parmenter,A. Martin,A and Hance,N. (2002):**

Factors affecting fruiting of the Périgordblack truffle: a comparison of productive and non productive Tuber melanosporumtruffières in New Zealand Crop & Food Research " Confidential report No. 768.

**Harrison. M. (2006):**

Fragrance Review: Tom Ford, Black Orchid .PerfumeCritic.com." Retrieved on 27 March 2007

**Hilszcza ńska, D.; Szmidla, H.; Sikora, K.; Rosa-Gruszecka A. (2019)**

Soil properties conducive to *Tuber aestivum* Vitt. fruiting bodies formation in the Nida Basin stands. *Pol. J. Environ. Stud.* 2019, 28, 1713–1718.

**Hussain, G. and Ruqai, I. (1999):**

Occurrence, Chemical Composition, and Nutritional Value of Truffles: An Overview ". *Vol. 2. P: 510-514*

**Janakat, J., Al-Fakhiri, S. and Sallal, A. (2004).**

A promising peptide antibiotic from *Terfezioclaveryi* aqueous extract against *Staphylococcus aureus* in vitro. *Phytother Res.* 18:810-813.

**Jevšnik, M . Hoyer, S. and Raspor, P. (2008):**

Food safety knowledge and practices among pregnant and non-pregnant women in Slovenia " . *V. 19 . P: 526-534*

**Kirkpatrick, L. A. & Feeney B. C. (2013).**

A simple guide to IBM SPSS statistics for version 20.0. (Student ed.). California: Wadsworth, Cengage Learning.

**Kotz, S., Balakrishnan, N., Read, C. B. & Vidakovic, B. (2006).**

Encyclopedia of statistical sciences. (2nd ed). Hoboken: Wiley-Interscience

**Maxwell, J. (2005):**

The Fungus Among Us "Green Gourmet. National Audubon Society" Oregon State University

**Mencarelli, F. Massantini, R. and Botondi, R. (1997):** " Physiological and textural response of truffles during low-temperature storage " J. Hort. Sci 72(3):407-414

**Miriam, R. Eric, B and Steve, W. (2006):**

Wild-gathered fungi for health and rural livelihoods " J. 1CABI Bioscience, Bakeham Lane, Egham, Surrey TW20 9TY, UK. Vol. 65, P:190-197

**Murcia, M., Martinez-tome, M., Jimenez, A., Vera, A., Honrubia, M. and Parras, P. 2002.**

Antioxidant activity of edible fungi (truffles and mushrooms): Losses during industrial processing. J. Food Protect. 65:1614-1622

**Nilsson, T. Montanarella, L. Tilio, R. Larsen, B. Facchetti, S. Madsen, J. PelSuu, F. (1995):** " Headspace solid-phase microextraction analysis of volatile organic sulfur compounds in black and white truffle aroma" J. Journal of agricultural and food chemistry . Vol. 43. P: 2138-2143 (24 ref.).

**Nina, J.(1985):**

The Baghdad Kitchen, The Kingswood press Surrey, UK,



**O'Dwyer, L. M., & Bernauer, J. A. (2013).**

Quantitative Research for the Qualitative Researcher.  
Thousand Oaks, CA: SAGE Publications retrieved from:  
<http://www.jpma.org.pk/PdfDownload/7698.pdf>

**Osejie, F. O. (2014).**

In vitro Mycelial Growth and Root Infection of Loblolly Pine  
Seedlings Padovan, A. C.,

**Pieroni, A(2016).**

The changing ethnoecological cobweb of white truffle (*Tuber  
magnatum* Pico) gatherers in South Piedmont, NW Italy. *J.  
Ethnobiol. Ethnomed.*2016, 12, 18. [CrossRef] [PubMed]

**Pilz, D. (2005):**

Oregon Truffles. A Culinary Delight From The Forest, An  
Oregon Garden Guide to Truffles Forest Mycologist,  
Department of Forest Science", Oregon State University,  
Corvallis, OR and Mike Bondi, Oregon State University  
Extension Agent, Oregon City, OR

**Robaszkiewicz, A., Bartosz, G., Ławrynowicz, M. and Soszyński,  
M. (2010).** The role of Polyphenols,  $\beta$ -Carotene, and Lycopene  
in the Antioxidative Action of the Extracts of Dried, Edible  
Mushrooms.

**Rossi, I., Bartolacci, B., Potenza, L., Bertini, L., Barbieri, E. and Stocchi, V. (2000).**

Identification of white truffle species using RAPD markers. Plant Soil 219:127-133.

**Roux,C.Sejalon-Delmas,N.Martins,M.Parguey- Leduc,ADargent ,R. and Becard,G.(1999):**

Phylogenetic relationship between European and Chinese truffles based on parsimony and distance analysis of ITS sequences".FEMSMicrobioLett 15,180(2):147-55

**Sawaya,W.Al-Shalhat,A.AL-shogiar,A. and Al- Mohammed - M. (1985):**

Chemical Composition and nutritive Value of Truffles of Saudi Arabia" .J.of Food Sci.50:450-453.

**Simpson, J. and Weiner, E. (1989):**

Oxford English Dictionary, edition, Clarendon Press", 19-861186-2

الرحمة,عبدالله (٢٠٠٠)

كمامة الصحارى والغابات ،الفقع غذاء وشفاء، الاصدار الاول ،جامعة الملك سعود.  
المملكة العربية السعوديةتنقلا عن العلوى , نوره بنت عبدالله (٢٠٠٩)  
العادات الغذائية المرتبطة بتناول فطر الكمامة وتأثير بعض معاملاتهما على فئران التجارب  
. جامعة ام القرى المملكة العربية السعودية

العلوى , نوره بنت عبدالله (٢٠٠٩)

العادات الغذائية المرتبطة بتناول فطر الكمامة وتأثير بعض معاملاتهما على فئران التجارب  
. جامعة ام القرى المملكة العربية السعودية ص ١٢٥-١٤٠. تكروري ،

تكرورى , حامد و ديور ، إبراهيم ( ٢٠٠٠ ) "

جودة البروتين في بعض أنواع الفطر الشائعة الاستعمال في الأردن . " المجلة العربية

للغذاء والتغذية . العدد الأول ص ٨-١٩

دراسة لبعض العادات والممارسات والمعتقدات الغذائية المرتبطة بالكمأة

لدى السعوديات

رحاب رافت عبد الرازق محمد الصباغ

استاذ مساعد التغذية و علوم الاطعمه- كلية العلوم والاداب - جامعة الحدود الشمالية  
المملكة العربية السعودية

الملخص العربي

اجريت هذه الدراسة لمعرفة بعض العادات والممارسات والمعتقدات الغذائية المتبعة عند اختيار وشراء واعداد وحفظ وطهي الكمأة ، ولتحقيق ذلك تم عمل استبيان الكتروني ونشره على السعوديات في محافظة رفحاء – المملكة العربية السعودية وكان حجم العينة ١٠٠ سعودية تتراوح أعمارهن بين ١٥-٥٠ عامًا واشتمل الاستبيان على البيانات الديموغرافية ( العمر والمستوى التعليمي والدخل الشهري ) والجزء الثاني من الاستبيان يتناول اسئلة متعلقة بالكمأة مثل الأنواع المفضلة منها والصور المفضلة للشراء وأسباب تفضيل الكمأة وطرق التعامل بعد الشراء وطرق التنظيف والاعداد للطهي وطرق الحفظ والاضافات التي تضاف اثناء الطهي والجزء الثالث يتضمن اسئلة حول بعض المعتقدات الغذائية المرتبطة بتناول الكمأة واطهرت النتائج ان ٨٠ % ممن اجبن على الاستبيان يتراوح اعمارهن بين ١٥-٢٩ عام و ٧٠% من عينة الدراسة تعليم جامعي ومن اكثر أنواع الكمأة المفضلة هي الزبيدي (٨٧%) وان (٩٢%) يفضلونها لمذاقها الجيد واكثر الصور المفضلة للشراء هي الطازجة (٩٢%) وان هناك علاقة معنوية ( $p=0.003$ ) بين المستوى التعليمي واختيار الكمأة الطازجة ووجد علاقة ( $p= 0.009$ ) بين المرحلة العمرية واختيار الكمأة الناضجة من ضمن الاعتبارات عند الشراء وهناك معنوية عالية ( $p = 0.000$ ) بين المستوى التعليمي وغسل الكمأة وطهيها ومعنوية اقل  $p<0.05$  ( $p= 0.02$ ) بين مستوى التعليم وغسل الكمأة وتقطيعها قبل تقشيرها وكانت طريقة السلق من اكثر طرق الطهي تفضيلا لدى العينة ( ٨٣%) كما وجد علاقة معنوية ( $p= 0.008$ ) بين المستوى التعليمي والاعتقاد بان شرب الماء البارد بعد تناول الكمأة ضار بالصحة وان ما يقرب من نصف العينة يعتقدون بان الكمأة بديلا للحوم وان تناولها في صورة نيئة يسبب التسمم و (٥٩%) يعتقدون ان للدعاية والاعلان دور في ارتفاع أسعار الكمأة وفي الختام نوصي باتباع ممارسات تداول الكمأة المناسبة قبل استخدامها في الطهي والحفظ

الكلمات المفتاحية : العادات , الممارسات, المعتقدات الغذائية , الكمأة, رفحاء , المملكة العربية السعودية