

The Daily Consumption of Fresh Dates in Abu Dhabi City

El-Behissy, E.Y.¹, King, R. D.², Hashim, M. O.¹

¹Food and Environment Control Centre, Abu Dhabi Municipality, UAE

²Department of Food Science and Technology, Reading University, UK

ABSTRACT

A questionnaire on the daily consumption of fresh dates in Abu Dhabi City had been done. The questionnaire distributed between 200 persons of different genders, ages and nationalities. The daily consumption per capita is about 10 to 200 g dates which varies depending on the age, sex, time of consumption and date maturity stage.

Also it was reported that most of the participants wash fruits before eating.

INTRODUCTION

In the UAE, as well as in other Arabic and Islamic countries, dates are considered as one of the most important crops because of their religious and nutritional importance. They are either produced locally or imported from producer countries such as Saudi, Iran, Egypt and Iraq.

The number of date palms increased in the last few years. There are about 25 million of date palm trees in the UAE, 10 million of them are fruiting, while 15 million are not (Ministry of Agricultural and Fisheries, UAE, 1997). Most of palm trees (19 millions) are in the Emirate of Abu Dhabi. The annual production of raw dates in the UAE is 288190 tons of which 128059 tons are produced by Abu Dhabi Emirate (Ministry of Agricultural and Fisheries, UAE, 1997).

Before the discovery of oil, dates were the main sources of food together with camel milk and fish (Ahmed et al., 1995). Dates are considered as a highly nutritive food. They are an excellent source of simple sugars, in addition to minerals and vitamins. The chemical composition of raw Tamer fruits of Khunaizy variety for example, is 25.1 % moisture, 53.9% total sugars of which 28.5 % are glucose and 25.4 % are fructose, 3.0 % protein, 0.1 % lipid, 1.4 % ash which consists of 0.2, 0.1, 1.5, 0.4, 59, 15, 197, and 704 mg/100 g dates of zinc, copper, iron, manganese, magnesium, calcium, sodium and potassium, respectively (Ahmed et al., 1995). Also, it is rich of vitamin A (80-100 IU), while 0.07, 0.03, 0.33-2.2 and 0.77-2.7 mg/100 g dates are the vitamins B1, B2, B7 and C, respectively (Ibrahim and Khlif, 1993).

Dates may be consumed raw (as Khalal (*mature full colour fruits*), Rutab (*soft brown fruits*) or Tamer (*hard raisin-like fruits*)) or after processing into jam, syrup, paste, packed Tamer or Tamer desserts.

The rate of consumption of dates is important factor that measure the importance of them and in sequence the economical utility of production of dates.

In Saudi the daily consumption of dates ranged from 15 to 115 g dates, which varies mainly depending on the age and gender. Also the rate of consumption differs from maturity stage to other where Rutab found to be the favoured stage (Sabbri et al., 1982).

METHOD OF THE QUESTIONNAIRE

The questionnaire was distributed randomly between 200 persons in Abu Dhabi City only. The 200 persons were as follows, 50 males under 18 years old, 50 males more than 18 years old, 50 females under 18 years old and 50 females more than 18 years old. Those persons were of different nationalities and jobs. The questionnaire concentrated on the following points:

- I] If the consumption is constant during the year or not?
- 1) If constant, (a) are dates eaten daily, and how many dates are consumed per day? (b) or are dates eaten weekly?, how many

- times are dates eaten during the week? And how many dates are consumed in each time?
- 2) If changeable, when is the consumption of dates increased? Is it during harvest, Ramadan, winter, Eids (Islamic feasts), or summer? And how many dates are consumed daily?
- II] Which stages are consumed?
- 1) Which stages (Khalal, Rutab and/or Tamer) is preferred? At which time are they consumed? And how many dates are consumed daily?
 - 2) Are they washed or not? And with what are they washed, water only or water and detergent?

Data, which processed were those answered with yes, and in sequence the n values related to those participants that reply yes for each section in the questionnaire.

RESULTS AND DISCUSSION

Although that the questionnaire was distributed between 200 persons (50 of each group) but the interaction of adults toward the questionnaire was better than those under 18 years, see Table 1. Table 2 shows the participants in term of nationalities where between 20 to 36 % are Emirates.

Changeable consumption is the common manner of consumption between the participants, while constant consumers are not more than 10 to 30 % of total participants.

The constant consumption of dates is either per day or week. It is clear from the results in Table 3, that no significant difference between the mean number of dates in the daily constant consumption and the weekly constant consumption. In addition to, the comparison between consumers in term of gender (Table 4) or in term of age (Table 5), showed no differences between the two cases (daily and weekly constant consumption) in the mean number of dates, although that the number of female constant consumers are higher than male constant consumers. The number of adult constant consumers was also higher than the under 18 constant consumers which may reflect the nutritive consciousness of adults.

The rate of changeable consumption varies depending on time of consumption during the year. Table 6 shows that most of changeable consumers consume dates in Ramadan, in which dates are the best food that fasters can start their feeding after fasting for long period, then in harvest time, while number of consumers in winter, Eids and summer are nearly equal.

The adult males are the highest consumers among other groups, then adult females, this is more clear in Table 8 which shows the comparison between consumers in term of age. This reflects the religious relation and the nutritive consciousness, which increase with the increase of age. Sabbri et al. (1982) reported that the daily consumption of dates by males and females of more than 40 years old, females of ages between 6-35 years old and males of ages between 6-35 years is averagely 12-15, 3-5, and 2-3 dates per capita, respectively.

Comparison in term of gender (Table 7) shows that the mean number of dates consumed by male is higher than female in Ramadan and Eids, while no difference in other three times. This reflects the religious manner of live during Ramadan and Eids. In Ramadan males mostly start their feeding in Mosques with dates in addition to water, while females have different choices at homes.

Comparison between number of participants that consume different maturity stages of dates (Table 9) showed that Rutab and Tamer are the preferred maturity stages comparing to Khalal which has low prefereability specially by under 18 participants, which is mostly because of its slightly sour taste. Sabbri et al. (1982) reported that Rutab stage is the preferred stage by Saudi consumers, then Khalal and Tamer are in nearly equal order. The mean number of Khalal fruits consumed by under 18 males and females is slightly higher than the mean number of Rutab and Tamer fruits. This may be explained in term of Khalal variety, which may be one of these sweetly varieties like Hilali, and in term of statistics as the n value with Khalal is lower than that for Rutab and Tamer so the mean will be higher.

Comparison between consumers in term of gender (Table 10) and age (Table 11) showed no significant differences in mean

number of dates, except for Rutab consumed by adults which is higher than that consumed by under 18 consumers. Although that there is no difference in the number of participants in term of gender, but in term of age the adults are nearly double the under 18.

Table 12 shows that Khalal is consumed only during harvest time, because it can not be stored for longer time, so it should be consumed fresh. Some people store it in freezers, but when it get out the freezers, it becomes Rutab not Khalal.

Rutab has different three times that can be consumed in them. But it is mostly consumed during harvesting time, as it is preferred to be eaten fresh (see the number of participants in harvest time in Table 12). While those fruits that consumed in other two times are those stored by freezing.

Finally, Tamer has five different times for consumption, but it is mostly consumed in Ramadan as it is clear from the number of participants in Table 12.

The comparison in term of gender showed some differences, but they are not significant differences (Table 13). On the other hand comparison in term of age showed significant differences, where adults consume different maturity stages during different times more than under 18 consumers.

Tables 15-17 show the participants that wash different maturity stages of dates before consumption. Most of participants wash fruits before consumption, where 100% of participants wash Khalal before consumption with water only and 92.4 % of participants wash Rutab with water only, while remaining do not. 66.9 % of participants wash Tamer before consumption of which 2.8 % wash using soap in addition to water, while 31.1 % do not wash Tamer before consumption. Gender or age has no effect on washing habit.

CONCLUSIONS

Consumption of dates has no significant constant manner during the year, but it is changeable, and the rate of consumption

increased in some times during the year. In term of number of consumers, consumption in Ramadan is the most, then harvest time, while the consumption in the other times during the year is low (e.g. summer and winter).

The differences in the consumption as a function of age is more significant than gender either as a function of consumption times or as a function of consumed maturity stages. Consumers of different ages and genders may be ordered according to the rate of consumption to adult males > adult females > under 18 females > under 18 males.

Rutab and Tamer are the preferred maturity stages, while Khalal is the least. The range of consumed date fruits is from 1 to 20 date fruit (10 to 200 grams) and averages are in the range from 3 to 11 fruits (30 to 110 grams).

Most of participants wash fruits before consumption using mostly water where no effect of age or gender on washing habit.

REFERENCES

- Agricultural Guidance Section, Abu Dhabi Municipality, 1998.
- Ahmed, I. A., Ahmed, A.K. and Robinson, R.K., 1995. Chemical composition of date varieties as influenced by the stage of ripening. *Food chem.*, 54, 305-309.
- Al-Oqaidi, K.H., 1987, Dates and Microbial Biotechnology, P. 113-127,136. Al-Watan Press Co., Lebanon. (*Arabic book*)
- Ibrahim, Atif M. and Khlif, Mohamad N.H. 1993, Date Palm, its Plantation, Care and Production in the Arabian Countries, P. 124. Egypt. (*Arabic book*)
- Ministry of Agricultural and Fisheries, UAE, 1997. In (Makki, M.A., Hamoud, A.M. and Al_Abri, A.S., 1998. Fruit Gardens Science, Part II, Date Palm, Vol I, P.130. Oman (*arabic book*))

Sabbri, M.M., Makki, Y.M. and Salehuddin, A.H., 1982, Study on dates consumers preference in different regions of the Kingdom of Saudi Arabia, P. 618-637. In (Proceedings of the First symposium on the Date Palm, 1982, King Faisal University, the Kingdom of Saudi Arabia

Table 1: Gender, age ranges and number of the participants.

Group	Gender	Age (Years)		Total number of participants	# of participants answered questions related to....										
		Mean	Range		Constant	Changeable					Maturity Stages				
					Ramadan	Harvest	Winter	Eids	Summer	Khalal	Rutab	Tamer			
1	Male	12	6-18	18	3	16	8	6	3	7	7	14	13		
2	Female	13	4-17	26	7	17	11	5	11	6	5	14	14		
3	Male	40	24-59	42	9	31	22	11	14	9	11	29	31		
4	Female	33	21-49	39	12	26	14	9	11	8	11	26	30		

Table 2: Number of participants in term of nationalities (UAE and other Arab countries)

Group	Gender	Age (years)		Total# of Participants	UAE		Other Arab Countries	
		Mean	Range		n ¹	% ²	n	%
1	Male	12	6-18	18	5	27.8	13	72.2
2	Female	13	4-17	26	9	34.6	17	65.4
3	Male	40	24-59	42	9	20.9	34	79.1
4	Female	33	21-49	39	14	35.9	25	64.1

¹ n: is the number of participants.

² % of total number of participants.

Table 3: Constant consumption of dates by males and females of different two age ranges during the year.

Group	Gender	Age (years)		Daily				Weekly				Weight of dates (g) ¹	Mean
		Mean	Range	n	Mean	Range	n	Number of dates		Mean			
								Range	n	Mean	Range		
1	Male	12	6-18	1	3	-	2	1-2	4	1-7	40		
2	Female	13	4-17	5	7	2-20	2	2	5	3-6	50		
3	Male	40	24-59	6	6	4-14	3	1-3	6	3-10	60		
4	Female	33	21-49	5	5	1-7	7	1-4	5	2-7	50		

¹ Considering that the weight of date fruit is 10 g, as the weight of date fruit is in the range 5-15 g (Al-Oqaifi, 1987).

Table 4: Constant consumption of dates as a function of gender during the year.

Gender	Daily				Weekly			
	Number of dates		Number of dates		Number of dates		Number of dates	
	n	Mean	Range	n	Times	Mean	Range	
Male	7	5	4-14	5	13	5	1-10	
Female	10	6	1-20	9	14	5	2-7	

Table 5: Constant consumption of dates as a function of ages during the year.

Age (years)	Daily				Weekly		
	Number of dates		Number of dates		Number of dates		Range
Mean	Range	n	Mean	Range	n	Times	Mean
12	4-18	6	5	2-20	4	1-2	5
37	21-59	11	6	1-14	10	1-4	6

Table 6: Changeable consumption of dates by males and females of different two age ranges during the year.

Group	Ramadan			Harvest			Winter			Eids			Summer		
	Number of dates			Number of dates			Number of dates			Number of dates			Number of dates		
	n	Mean	Range	n	Mean	Range	n	Mean	Range	n	Mean	Range	n	Mean	Range
1	16	4	1-10	8	5	3-10	6	6	1-10	3	7	5-10	7	5	1-10
2	17	4	1-15	11	6	1-10	5	6	2-10	11	3	1-8	6	9	1-20
3	31	8	3-20	22	9	1-20	11	7	2-15	14	8	2-18	9	11	2-20
4	26	6	2-10	14	7	3-20	9	7	2-15	11	6	2-10	8	8	2-20

Table 7: Changeable consumption of dates as a function of gender during the year.

Gender	Ramadan			Harvest			Winter			Eids			Summer		
	Number of dates			Number of dates			Number of dates			Number of dates			Number of dates		
n	Mean	Range	n	Mean	Range	n	Mean	Range	n	Mean	Range	n	Mean	Range	
Male	47	6	1-20	30	7	1-20	17	7	1-15	17	8	2-18	16	8	1-20
Female	43	5	1-15	25	7	1-20	14	7	2-15	22	5	1-10	12	9	1-20

Table 8: Changeable consumption of dates as a function of ages during the year.

Age (years)	Ramadan		Harvest		Winter		Eids		Summer							
	Number of dates	Range	Number of dates	Range	Number of dates	Range	Number of dates	Range	Number of dates	Range						
Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	Range					
Range	n	Mean	Range	n	Mean	Range	n	Mean	Range	n	Mean	Range				
12	4-18	33	4	1-15	19	6	1-10	11	6	1-10	14	5	1-10	11	7	1-20
37	21-59	57	7	2-20	36	8	1-20	20	7	2-15	25	7	2-18	17	9	2-20

Table 9: The consumption of different maturity stages of dates among males and females of different two age ranges.

Group	Gender	Age (years)		Khalal				Rutab				Tamer			
		Mean	Range	Number of dates		Number of dates		Number of dates		Number of dates		Number of dates			
				n	Mean	Range	n	Mean	Range	n	Mean	Range	n	Mean	Range
1	Male	12	6-18	7	6	2-10	14	5	1-15	13	6	1-10	13	6	1-10
2	Female	13	4-17	5	8	3-12	14	5	1-12	14	5	1-20	14	5	1-20
3	Male	40	24-59	11	6	1-20	29	8	1-20	31	8	1-20	31	8	2-20
4	Female	33	21-49	11	5	2-15	26	8	2-20	30	7	1-20	30	7	1-20

Table 10: The consumption of different maturity stages of dates as a function of gender.

Gender	Khalal			Rutab			Tamer		
	n	Mean	Range	n	Mean	Range	n	Mean	Range
Male	18	6	1-20	43	7	1-20	44	7	1-20
Female	16	7	2-15	40	6	1-20	44	6	1-20

Table 11: The consumption of different maturity stages of dates as function of age.

Age (years)	Khalal			Rutab			Tamer			
	n	Mean	Range	n	Mean	Range	n	Mean	Range	
12	4-18	13	7	2-12	28	5	1-15	27	6	1-20
37	21-59	22	6	1-20	55	8	1-20	61	7	1-20

Table 12: Preferred times for the consumption of different maturity stages of dates among males and females of different two age ranges.

Group	Ruhb										Tamer							
	Khalal		Harvest		Ramadan		Winter		Harvest		Ramadan		Winter		Eid		Summer	
	# of dates	Mean	# of dates	Mean	# of dates	Mean	# of dates	Mean	# of dates	Mean	# of dates	Mean	# of dates	Mean	# of dates	Mean	# of dates	Mean
1	7	6	12	5	3	4	-	-	1	5	9	4	5	5	2	8	3	5
2	5	8	14	4	2	3	-	-	3	6	12	4	1	3	4	4	3	8
3	12	6	25	9	7	7	6	8	3	10	16	8	14	8	3	6	4	5
4	11	5	18	9	6	6	5	4	1	10	17	6	13	6	6	8	5	3
		Mean		Mean		Mean		Mean		Mean		Mean		Mean		Mean		Mean

Table 13: Preferred times for the consumption of different maturity stages of dates as a function of gender.

Gender	Ruhb					Tamer												
	Khalal		Harvest		Ramadan		Winter		Harvest		Ramadan		Winter		Eid		Summer	
	# of dates	Mean	# of dates	Mean	# of dates	Mean	# of dates	Mean	# of dates	Mean	# of dates	Mean	# of dates	Mean	# of dates	Mean	# of dates	Mean
Male	18	6	37	7	10	6	6	8	4	4	8	25	6	19	7	5	7	7
Female	16	7	32	7	6	5	5	4	4	8	29	5	14	5	10	6	7	8
		Mean		Mean		Mean		Mean		Mean		Mean		Mean		Mean		Mean

Table 14: Preferred times for the consumption of different maturity stages of dates as a function of age.

Age (years)	Range	Khalal			Rutab			Tamer								
		Harvest	Harvest	Ramadan	Winter	Harvest	Ramadan	Winter	Eids	Summer						
		# of dates	# of dates	# of dates	# of dates	# of dates	# of dates	# of dates	# of dates	# of dates	# of dates					
Mean	n	Mean	N	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n	
12	4-18	12	26	4	5	-	4	6	4	21	4	6	4	6	6	7
37	21-59	22	43	7	9	1	4	6	4	33	7	27	7	9	9	4

Table 15: Number of participants who wash or not Khalal before consumption.

Group	Gender	Age (years)		Khalal				
		Mean	Range	n	No	Yes	water only	Water and Soap
1	Male	12	6-18	7	0	7	7	0
2	Female	13	4-17	5	0	5	5	0
3	Male	40	24-59	11	0	11	11	0
4	Female	33	21-49	11	0	11	11	0

Table 16: Number of participants who wash or not Rutab before consumption.

Group	Gender	Age (years)		Khalal				
		Mean	Range	n	No	Yes	Water only	Water and Soap
1	Male	12	6-18	14	1	13	13	0
2	Female	13	4-17	18	0	18	18	0
3	Male	40	24-59	30	3	27	27	0
4	Female	33	21-49	24	3	21	21	0

Table 17: Number of participants who wash or not Tamer before consumption.

Group	Gender	Age (years)		Khalal				
		Mean	Range	n	No	Yes	Water only	Water and Soap
1	Male	12	6-18	14	1	11	11	0
2	Female	13	4-17	17	9	8	8	0
3	Male	40	24-59	31	9	22	21	0
4	Female	33	21-49	30	6	24	22	0

معدل الاستهلاك اليومي من التمور الطازجة في مدينة أبوظبي

إلهام يوسف البحيصي^١، ريتشارد كينج^٢ و محمد عثمان هاشم^١

^١ مركز رقابة الأغذية والبيئة، بلدية أبوظبي، الإمارات

^٢ قسم علوم وتكنولوجيا الأغذية، جامعة ردينج، بريطانيا.

ملخص

تم دراسة معدل الاستهلاك اليومي من التمور الطازجة في مدينة أبوظبي. وقد تمت هذه الدراسة من خلال توزيع استبيان على ٢٠٠ شخص من الجنسين من مختلف الأعمار والجنسيات.

وقد وجد أن معدل الاستهلاك اليومي للفرد يتراوح ما بين ١٠ إلى ٢٠٠ جرام من التمور الطازجة. و يختلف هذا المعدل باختلاف العمر، الجنس، وقت الاستهلاك من السنة، و مرحلة النضج المستهلكة.

وقد تبين من الاستبيان أن معظم المستهلكين يتناولون التمور بمراحل نضجها المختلفة بعد غسلها.