

Effect of Dates During the Tapering Period on Some Antioxidants, Glucose and Record Level for 50m Freestyle Young Swimmers

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Abstract: This research tries to investigate the role of dates on some antioxidant, glucose and 50m freestyle record for young swimmers. The diets rich in complete elements besides practicing scientific training program plays a main role in promoting swimmer's performance capacity to reach high levels. Having a meal before the competition and in tapering period plays an important role in supplying energy for the body during the race. Dates are the best dried food that contains many nutrients to improve swimmer's performance. Where, God Almighty says in his Holy Quran "And the pangs of childbirth drove her unto the trunk of the palm tree. She said: Oh, would that I had died here this and had become a thing of naught, forgotten! (23) Then one cried unto her from below her, saying: Then one cried unto her from below her, saying: Grieve not! For thy Lord hath provided a rivulet beneath thee, (24) and shakes towards you the trunk of the palm-tree: It will let fall fresh ripe dates upon thee. (25) So eat and drink and cool thine eye. And if thou dost see any man, say, 'I have vowed a fast to Allah Most Gracious and this day will I enter into not talk with any human being (26) [1]. The swimmers need to a quick source of energy to arrive quickly to muscle cells, where, the date palm contains many source of energy useful for swimmer, especially during events day.

Key words: Antioxidants • Glucose • Swimming

INTRODUCTION

This research tries to investigate the role of dates on some antioxidant, glucose and 50m freestyle record for young swimmers. Where, the diets rich a variety of complete elements beside the scientific training program plays a main role in promote swimmer's performance capacity to reach to high levels.

The swimmer needs all the nutrients to the extent that would bring him the energy required to perform training [2]. meal before the competition and in tapering period plays important position in supplying energy for the body of the race, the protein is not required at that stage where it works to absorb oxygen that needed cells, in addition to that is not considered an essential source of energy, it is also hard to digest and may cause nausea during this period in the training phase, as well as fat is difficult to digest and add burdens on the process of breathing [3].

The dates are the best dried foods that contain many nutrients to improve swimmer's performance as dates do not contain lots of vitamin C, but iron-rich and they are easy to be absorbed. They lower cholesterol, considered

an important source of selenium "one of the antioxidants" and they are useful for the endocrine and immune system[4].

The date palm contain a high percentage of carbohydrate (total sugars, 44-88%), fat (0.2-0.5%), 15 salts and minerals, protein (2.3-5.6%), vitamins and a high percentage of dietary fiber (6.4-11.5%). The flesh of dates contains 0.2-0.5% oil, whereas the seed contains 7.7-9.7% oil. The weight of the seed is 5.6-14.2% of the date. The fatty acids occur in both flesh and seed as a range of saturated and unsaturated acids, the seeds containing 14 types of fatty acids, but only eight of these fatty acids occur in very low concentration in the flesh. Unsaturated fatty acids include palmitoleic, oleic, linoleic and linolenic acids. The oleic acid content of the seeds varies from 41.1 to 58.8%, which suggests that the seeds of date could be used as a source of oleic acid. There are at least 15 minerals in dates [6].

The total concentration of carbohydrate in dates increases from the Kimri stage through the Khalal and Fresh date stages, to the Tamr stage and depends on the type of date. The concentration of total sugars in

Table 1: The effect of stage of ripening on the mineral content of dates

Mineral	Stage of ripening (mg/100 g dry date)			
	Kimri stage	Khalal stage	Fresh date stage	Tamr stage
Calcium	142.4	75.4	76.3	37.8
Copper	0.3	0.2	0.4	0.3
Iron	8.1	1.5	1.0	0.9
Magnesium	121.0	74.9	65.4	53.2
Phosphorus	117.2	132.4	87.2	53.3
Potassium	752.6	510.1	338.1	107.4
Sodium	7.0	17.4	10.9	2.5
Zinc	1.0	0.5	0.8	0.4

Data are from Al-Hooti *et al.* [5].

Table 2: Sucrose, glucose, fructose and moisture content in Nabtat Ali, Rashudia and Sukkari dates cultivars (%)

Content	Rashudia	Nabtat Ali	Sukkari
Fructose	23.39	15.92	9.17
Glucose	26.59	19	12.45
Sucrose	9.27	28.84	35.94
Moisture	27.2	24.85	19.82

Data are from Al-Humaid *et al.* [7].

the Kimri stages varies from 3.4 to 7.7% and the concentration of total sugars in the Khalal stage varies from 18.8 to 31.9%. The concentration of total sugars in the Fresh date stage varies from 43.9 to 50.1% while the concentration of total sugars in Tamr stage varies from 44.3 to 64.1%. In other varieties of date, the concentration of total sugars is as high as 88%.⁹ The percentage of glucose and fructose in the flesh of Barhi dates increases from the Kimri stage (4.9% and 2.8%, respectively) to the Khalal stage (13.1% and 11.8%, respectively) through the Fresh date stage (21.4% and 19.4%, respectively) to the Tamr stage (29.7% and 27.6%, respectively). The percentage of glucose and fructose in date seeds equals 10.8% and 7.3%, respectively, which is less than the percentage from the Khalal stage to the Tamr stage. Only sucrose exists in the Khalal stage at a concentration of 6.2%, whereas its concentration in the seeds is 51.4% [7, 8].

Since the tapering is the most important periods in the training program, which is creating swimmer to enter the competition and be for a period ranging from 1 week to 3 weeks depending on the importance of competition [9]. The role of the dates is vital at that stage, where the Holy Prophet (peace be upon him) to fast in Ramadan to eat before pray on fresh dates, fresh tamrs and after tamrs take some sences of water [10]. when the faster grants fast in to breakfast, he needs a quick source of energy and arrive quickly to his brain and the rest of the members and faster food digestion and absorption and energy supply are sugars, we find that the Prophet (peace be upon him) presented Fresh date on tamr in the Hadith, which is in accordance with the verse in the Holy

Quran "Maryam", the dominant quality of sugars in fresh dates differ from those predominant in tamrs, sugar in tamrs mostly from the glucose sugars and sucrose sugars [11].

MATERIALS AND METHODS

The researcher used experimental methodology by selecting one intentional group from Ismaili club. 8 young swimmers (12-14 ages) all males with experience 4 years (2years of competitive swimming) and participated in Egypt championship.

All subjects exposed to tapering period (3 weeks) and took 7 tamers per day during this period. Also, took 7 fresh dates before the championship (the day of racing).

In addition to the measurement of laboratory parameters as sequence:

Glucose: (photometric at 445 n.m) by enzymatic oxidation of glucose by using glucose oxidase enzyme.

Hemoglobin: (photometric at 545 n.m) hemoglobin is oxidized to met hemoglobin by using potassium ferricyanide then it is converted to cyano met hemoglobin.

Iron: (photometric at 595 n.m) by using ferine which forms a blue color with ferrous ions (this color absorption at 595 n.m is directly proportional to the iron concentration in 24Hrs urine.

Copper: Atomic absorption spectrophotometry in 24Hrs urine.

Table 3: Participant characteristics

	Before using the date palm (n=8) ±
Age(yrs)	12.88±0.99
Training age(yrs)	5.88±0.99
Weight(kg)	54.88±2.3
Length(cm)	157±3.8
Iron (ug/dl)	60.65±5.07
Zinc (mg/l)	1.15±0.14
Copper (ug/dl)	5.35±1.94
Potassium (mmol/l)	64.75±7.05
Glucose (mg%)	71.13±1.96
Hemoglobin (g/dl)	12.5±0.77
50m Freestyle record (sec)	31.93±2.68

Table 4: Significant differences between the two measures before and after for research group by using independent samples T test

Statistic Variables	Before		After		Different between average	T test value
	±	±	±	±		
Iron	60.65	5.07	122.75	14.02	-62.1	11.78*
Zinc	1.15	0.14	1.96	0.08	-0.81	14.04*
Copper	5.35	1.94	16.25	1.49	-10.9	12.59*
Potassium	64.75	7.05	121.88	9.78	-57.13	13.41*
Glucose	71.13	1.96	92	4.78	-20.87	11.43*
Hemoglobin	12.5	0.77	13.69	0.37	-1.19	3.93*
50m Freestyle	31.93	2.68	30.06	2.79	1.87	1.36

* T table value in 0.05 = 2.365

Zinc: by using AAS (atomic absorption spectrophotometry) in 24Hrs urine.

Potassium: Atomic absorption spectrophotometry in 24Hrs urine.

Statistical Analysis: Data were examined using SPSS statistical software (Version 16.0 SPSS for Windows, SPSS Inc., Chicago, IL). All subjects were represented for each test. Descriptive characteristics were expressed as mean values, standard deviations (SD) and nonparametric static. The level of significance was set at $p < 0.05$.

RESULTS AND DISCUSSION

Table 3 shows mean values±standard deviation (SD) of age, training age, weight and length, minerals and trace elements in urine, Glucose and hemoglobin in blood and 50m freestyle record level for swimmers.

Table 4 shows T test value in all variables and 50m freestyle record for swimmers.

On the whole, there are significant variances between before and after program by using date palm. Where, were increased in urine. Then there were increased in glucose and hemoglobin in blood. Also, there was improvement in 50m freestyle record for swimmers but no significant.

DISCUSSION

The central objective of the present study was to analyze the effect of date palm during tapering period on some antioxidants, glucose, hemoglobin and 50m freestyle record for young competitive swimmers age's 12-14years, Similar to results of other studies conducted in the chemical nature of the pectin polysaccharide, which constitutes the main gelling agent of date materials. Pectin is a galacturonic acid whose esterifies form with methyl groups can form a gel network assisted by the presence of high levels of sugar. These conditions, of course, are met in dates, which contain up to 70% unrefined sugars [12].

This study agree with the next research reported that thioacetamide (TAA) induced rats showed a very highly significant decrease in serum glucose level as compared to normal control rat group and the level of serum glucose after treatment by date palm extract and ascorbic acid increase with significant in post treatment with date palm extract and a non significant in post treatment with ascorbic acid as compared with TAA induced rats [13] and acceptable with Wasseem *et al.* [14] who indicated that date consumption (and mainly the Hallawi variety) by healthy subjects, despite their high sugar content,

demonstrates beneficial effects on serum triacylglycerol and oxidative stress and does not worsen serum glucose and lipid/lipoprotein patterns.

In addition, this study according with study illustrated that the potential of Iranian dates as antioxidant functional food ingredients [15]. Also, according with the results indicated that antioxidant and antimutagenic activity in date fruit is quite potent and implicates the presence of compounds with potent free-radical-scavenging activity [16]. and the study indicated that the fruits of the date palm contain a wide array of phenolic antioxidants [17]. Also, results agree with Saafi *et al.* [18] indicating that in vivo date palm fruit may be useful for the prevention of oxidative stress induced hepatotoxicity. But there wasn't statistic significant in swimming record level may due to the short of period. Abu Elela [2] suggested that the minerals didn't lead to increase swimming performance.

CONCLUSION

The present study suggests that the date palm effects on increase the glucose level into muscle cells rapidly. Also, it enhances antioxidants that reverse on improve the record level for 50m freestyle.

With the present study we confirmed the importance of using the date palm during the swimming training especially for young swimmers to enhance the trace elements, minerals and sugars that needs during training periods.

RECOMENDATIONS

In the light of the results of this study and within the study sample conducted by this study, the researcher recommends the following:

- The researcher recommends eating dates during periods of the training program.
- The researcher recommends further study to identify the effects of the dates on the energy enzymes.
- The researcher recommends further study to identify the effects of dates for endurance activities, especially swimming open water.

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