



MSD

The effect of oats on compositional changes after wearing complete dentures

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Abstract

Twenty fully edentulous subjects ranging from 50-80 years old .The subjects were selected from patients attending the prosthetic department in medical technical institute \ Baghdad in middle technical university .

The aim of this study was to evaluate the influence of oats on the changes in composition (zn) (mg) in saliva of edentulous patients after wearing of new complete dentures.

The results suggest that (Oats) diet exerted significant influence in concentration mg in edentulous patient and significant difference in concentration of Zn in the treatment group who received new complete dentures.

Introduction

The placement visit represents a critical juncture in the delivery of complete denture service. It makes the transition of control from the dentist to the patient and initiates the post-placement period.(1)

Oats are a good source of magnesium selenium, manganese and phosphorous, oats are also good source of vitamin B1 and dietary fiber. The protein in oats is almost equivalent to the quality of soy protein and combined with the dietary, makes it the ideal food to start the day with(2).

Magnesium is needed for bone, protein, making new cell, activating B vitamins, relaxing nerves and muscles, clotting blood, and energy protection. Insulin secretion and function also requires magnesium.

Magnesium also assists in the absorption of calcium, vitamin C and potassium (3).

Deficiency may result in fatigue, nervousness, insomnia, heart problems, high blood pressure, osteoporosis, muscle weakness and cramps. Adults need 310 to 420 mg / day (4).

Zinc this metal is important in a number of key activities, ranging from protein and carbohydrate metabolism to the immune system, wound healing, growth and vision (5).

Men need 15 mg / day women should get 12 mg / day (6).

Food and nutrition are significant factors in the living of any age group, but they are especially important for elderly (7).

Nutritional changes and deficiencies can influence salivary function as well. (8)

A 1990 study at the university of Kentucky showed that adding 1\2 cup oat bran (measured when dry) to your

daily diet can reduce levels of LDLs by as much as 25 percent.

In the early years of the 20th century, several attempts were made to identify and analyze ions and molecules found in saliva. These efforts served as proof of principle for saliva to become a diagnostic fluid (9). The present study was designed to study changes in composition (Zn, Mg) in saliva in edentulous patients after wearing complete dentures.

Materials and Methods

The sample consisted of (20) individuals participated ranging from 50-80 years old. The subjects were selected from patients attending to the prosthodontics department institute of medical technology "Baghdad" in middle technical university, were divided into two groups. The first group was 10 edentulous patients without any signs or symptoms of any systemic diseases and under the influence of oats diet.

The second group was 10 control groups. Those patients come to the prosthetic clinic to have their first denture in their life who was allowed to diet as they wished.

Method

New complete dentures were fabricated for all participants by using the same technique the influence of diet. (Oats) unstimulated (resting) whole saliva was collected after the patient has rinsed his mouth with tap water. Two minutes were allowed to pass for clearance of water from the mouth.

The accumulated saliva in the floor of the mouth was drawn by a plastic disposable pipette. Collection period was about 20 minutes and sampling time was between 10 a.m. to 1 p.m.

All samples were stored frozen at minus 20 centigrade in polyethylene

tubes until assessed. Salivary levels of trace elements (zinc, magnesium) were assessed by the use of flame atomic absorption spectra-photometry (AAS).(10)

Saliva collection and analysis for the second group of patients two weeks after the insertion of their complete dentures.

Results

For this group of (20) edentulous who receive new dentures, age ranges from 50-80 years.

The zinc (Zn), magnesium (Mg) contents of saliva (ppm) in the two groups of patients is shown in table 1. There was a very mild change in the value of Zn but values of Mg showed increased in edentulous group's diet (oats).

The mean and S.D. treatment group (oats) for sample (10) 6.312 ± 1.533 for Mg in saliva of edentulous denture wearers. While the mean and S.D. in sample (10) was 5.872 ± 1.162 control group shown in table 2 fig. 1.

The mean and S.D. treatment group (oats) for sample (10) 0.470 ± 0.230 for (Zn) in saliva of edentulous denture wearers. While the mean and S.D. in sample (10) was 0.443 ± 0.200 control group shown in tab. 2 fig.2

Discussion

Saliva is necessary for the normal functions of most defense system of the oral cavity (11). Saliva has multiple functions and contains numerous elements which help its known functions. The composition of saliva changes due to different factors such as drug taking and aging (12) food and nutrition are significant factors in the living of any age group, but they are especially important for elderly. When individuals loose their teeth and become edentulous. Compositional

changes may occur in their saliva due to absence of teeth and periodontal structures(13). We studied the differences in values of Zn and Mg in saliva in edentulous patient wearing dentures treatment group prescribed (oats) and edentulous patient control group after wearing denture (10 days).

The results of the present investigation revealed some changes in concentration of Mg in edentulous patients. It measured a significant difference between the treatment and control group across the entire assessment as function of diet ($p < 0.05$) and a significant difference in concentration of Zn in the treatment and control group as function of diet.

The observations reported in the present study indicate the compositional changes occur in saliva of edentulous people, especially when they wear dentures.

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Table (1) Values in (parentheses) represent RDA%. N.a.=Not available. No detectable amounts of vitamins A.C.D₁₂ in any grain

	Wheat	Maize	Rice	Barley	Sorghum	Oats	Rye	Millet
Vitamin								
B1,mg	0.38 (35%)	0.39 (35%)	0.40 (36%)	0.65 (59%)	0.24 (22%)	0.76 (69%)	0.32 (29%)	0.42 (38%)
B2,mg	0.12 (9%)	0.20 (15%)	0.09 (7%)	0.29 (22%)	0.14 (11%)	0.14 (11%)	0.25 (19%)	0.29 (22%)
B3,mg	5.47 (36%)	3.63 (24%)	5.09 (34%)	4.60 (31%)	2.92 (20%)	0.96 (6%)	4.27 (28%)	4.72 (31%)
B6,mg	0.30 (21%)	0.62 (39%)	0.51 (32%)	0.32 (20%)	n.a (n.a)	0.12 (7%)	0.29 (18%)	0.38 (24%)
Folate, mg	38.2 (21%)	19.0 (11%)	19.5 (11%)	19.0 (11%)	(n.a)	56.0 (31%)	59.9 (33%)	85.0 (47%)
Pantothenic acid, mg	0.95 (% 17)	0.42 (8%)	1.49 (27%)	0.28 (5%)	n.a (n.a)	1.35 (24%)	1.46 (26%)	0.85 (15%)
Biotin	n.a (n.a)	n.a (n.a)	n.a (n.a)	n.a (n.a)	n.a (n.a)	n.a (n.a)	n.a (n.a)	n.a (n.a)
E, mg	n.a (n.a)	0.49 (6%)	0.68 (9%)	0.57 (7%)	n.a (n.a)	1.09 (14%)	1.28 (16%)	0.05 (1%)
Mineral								
Potassium, mg	363 (18%)	287 (14%)	223 (11%)	452 (23%)	350 (17%)	439 (21%)	264 (13%)	195 (10%)
Sodium, mg	2 (0%)	35 (1%)	7 (0%)	12 (1%)	6 (0%)	2 (0%)	6 (0%)	5 (0%)
Calcium, mg	29.0 (4%)	7.0 (1%)	23.0 (3%)	33.0 (4%)	28.0 (4%)	53.9 (7%)	33.0 (4%)	8.0 (1%)
Phosphorus, mg	288 (36%)	210 (26%)	333 (42%)	264 (33%)	287 (36%)	523 (65%)	374 (47%)	285 (36%)
Magnesium, mg	126 (45%)	127 (45%)	143 (51%)	133 (48%)	n.a (n.a)	177 (63%)	121 (43%)	114 (41%)
Iron, mg	3.19 (21%)	2.71 (18%)	1.47 (10%)	3.60 (24%)	4.40 (29%)	4.72 (31%)	2.67 (18%)	3.01 (20%)
Zinc, mg	2.65 (22%)	2.21 (18%)	2.02 (17%)	2.77 (23%)	n.a (n.a)	3.97 (33%)	3.73 (31%)	1.68 (14%)
Copper, mg	0.43 (19%)	0.31 (14%)	0.27 (12%)	0.50 (22%)	n.a (n.a)	0.63 (28%)	0.45 (20%)	0.75 (33%)
Manganese, mg	3.98 (114%)	0.46 (14%)	3.75 (107%)	1.95 (56%)	n.a (n.a)	4.92 (140%)	2.68 (77%)	1.63 (47%)
Selenium, mg	0.043 (78%)	0.004 (8%)	n.a (n.a)	0.066 (120%)	n.a (n.a)	n.a (n.a)	n.a (n.a)	n.a (n.a)

Table (2) Distribution of mean concentration (ppm) and standard deviation of element (zn, mg) in saliva of edentulous denture wearers.

T	N	Mean(mg)	S.D (mg)	Mean(zn)	S.D(zn)
Treatment Group	10	6.312	1.533	0.470	0.230
Control Group	10	5.872	1.162	0.443	0.200
Total	20				

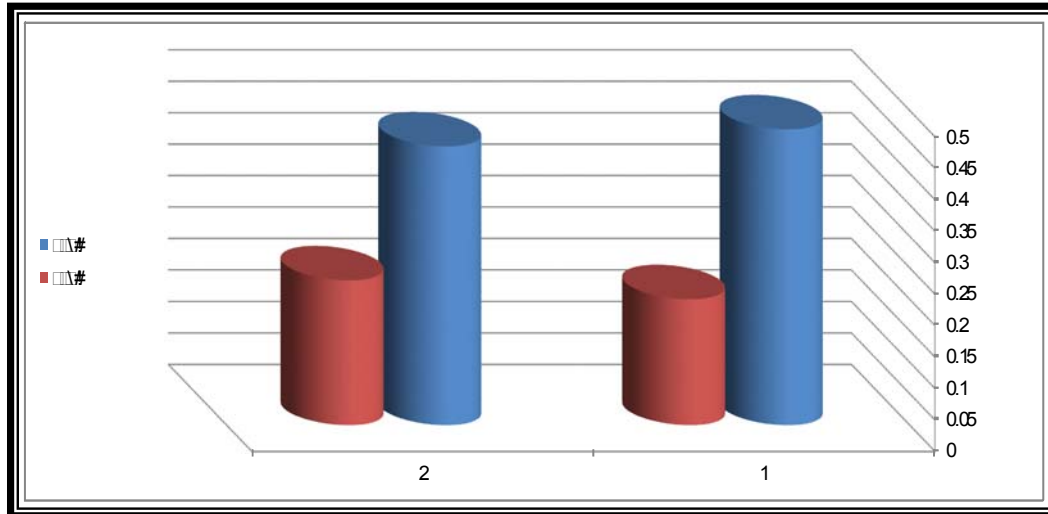


Figure 1: Relation between concentration of magnesium (mg)in whole saliva

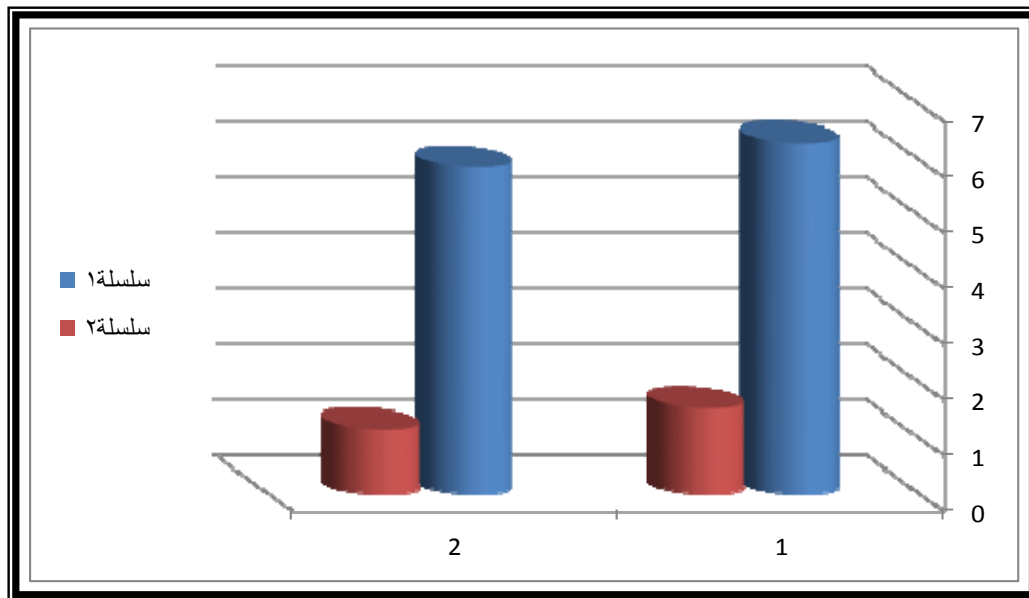


Figure 2: Relation between concentration of zinc (zn) in whole saliva