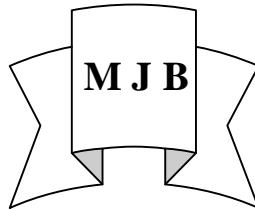


The effect of celery seeds with honey in treatment of bronchial asthma

Al-bayati N.Jalal, Abdul Razzak A. Latif , Al-Muktar Entisar J. ,
Qabas Q. Mohammed



Abstract

There are some defense mechanisms in the organism to avoid the harmful effects of free radicals. The enzymes responsible for antioxidant defense have trace elements like Zinc, Copper and Selenium within their structure. Decreased levels of these elements lead to a reduction in the antioxidant activity.

In this study we aimed to determine the activity of the medicinal plant (celery seed) and honey in correcting the level of these elements in sera and their effect on pulmonary function (PF) by measuring the FEV₁% (Forced expiratory volume) and FVC % (Forced vital capacity) that for detection the improvement of lung function as well as the effect of treatment in decrease in severity and numbers of attacks (symptomatically).

All data reflect the effectiveness of the mixture to elevate serum zinc and selenium level also increase in pulmonary function parameters. This result indicated to the antioxidant activity of this treatment.

الخلاصة

يلعب جذور الأوكسجين الحر دورا مهما في أمراض الرئة القصية و يعتبر الزنك والنحاس والسليسيوم من العناصر التي تدخل في تركيب الإنزيمات المسؤولة عن الآلية المضادة للأكسدة لهذا ، فان قلة هذه العناصر تؤثر سلبا على فعالية هذه الآلية الدفاعية إن الهدف من هذه الدراسة هو إيجاد علاج من الطب البديل فقد تم تحديد تأثير بذور الكرفس مع العسل على هذه العناصر في مصل الدم بالإضافة إلى تأثير هذه الخلطة على وظائف الرئة مع ملاحظة التأثير على عدد وشدة النوبات. أشارت كل النتائج إلى فاعلية هذه الخلطة في زيادة هذه العناصر حيث ارتفع مستوى الزنك في مصل الدم من 87.13 ± 12.29 إلى 22.35 ± 123.00 كما لوحظ ارتفاعا معنويا في تركيز السليسيوم . أما تأثير الخلطة على فحص وظائف الرئة حيث لوحظ زيادة معنوية في النسبة المئوية للحجم لظفري ألقسري في الثانية الأولى وقدرة الحجم الإجمالية حيث أصبحت 80.77 ± 9.08 و 83.18 ± 9.82 على التوالي إضافة إلى تأثير الخلطة كموسع للقصبات و مقشع.

Introduction

Asthma is an inflammatory syndrome which is unlike a disease can not be attributed to one specific cause but rather to multiple causes (1). Many authors have argued that the changes in diet may have been an important determinant of increased susceptibility to asthma (2).

The reduction in antioxidant intake reflected in the diet of pregnant women, would increase the susceptibility of the new-born baby to allergens (2).

In this study we aimed to define the effect of alternative therapy in normalizing the serum trace elements (Zn , Cu & Se) which were very important in antioxidant enzyme system also the effect of honey in pulmonary function test parameters PFT (FEV₁ & FVC).

Material & methods

This study was carried in the college hospital of Al-Nahrain University. Sixty patients with chronic stable asthma during regular follow-up in the out patients asthma clinic were studied. All patients were non smoker (smoking affect the PFT) (3); and alcohol consumer were excluded (4). All patients introduced in this study suffered only from asthma.

The diagnosis has been previously established in each patient and was based on family history, clinical history, reversibility of FEV₁ & PEF (peak expiratory flow rate) and laboratory result of chest X-Rays.

The patients washed out gradually from any previous treatment and prevented from any exercise or exposure to any allergens.

The patients advised to take special kinds of diet. all patients received (5g) celery seed [which equal to one table spoonful of the mixture of celery seed and honey at

concentration 1 g/ml of honey] orally once daily for one month .

Serum sample was determined from the patients of peripheric venous blood sample were preserved at (-20C°) (the blood sample taken pre and post treatment).

Serum Zn, Se & Cu ions levels were measured by atomic absorption spectroscopy and values expressed in microgram per deciliter $\mu\text{g} / \text{dl}$ (5).

Pulmonary function test was performed (pre and post treatment) by using Spiro meter and determine the percentage of FEV1 & FVC.

Statistical Analysis:

All results were given as the mean \pm standard deviation value and data analysis were performed by SPss 9.0 statistical program. The data coded in to a data base and analyzed by SPss. Differences between cases and post treatment were tested by t test and $P < 0.05$ value was accepted as statistically significant.

Results

The main analysis was restricted 60 patients. Table (1) shows the distribution of demographic data of the pre and post treatment. There were statistical differences in serum zinc, copper and selenium level between pre and post treatment with the mixture .The elevation in serum zinc level is from 87 ± 12.29 to 123.00 ± 22.35 as well as Se level it reach 66.25 ± 8.6 versus 42.60 ± 9.21 .

The effect of treatment on lung function defined according to PFT. The results were significant improvement as shown in table (2).

Discussion

The free radicals were considered as responsible for wide number of diseases because of their disturbing effects on the cells and tissues. There are defense mechanisms for protection from the injury of these free radicals.

These mechanisms were taken apart in the pathogenesis of many respiratory tract diseases.

Recently after understanding the role of free oxygen radicals in the pathogenesis of asthma, most studies pay attention to anti oxidant defense system and selenium which is a serum trace element.

The enzyme glutathione peroxidase is one of the antioxidant defenses which protect the lungs from the potentially damaging effects of free oxygen radicals.

Selenium is an integral component of all these enzymes , thus , reduced intake of this trace elements may potentially lead to reduced activity of glutathione peroxidase and decreased antioxidant defense mechanism(6). That mean serum Se level is very important for the activity of the glutathione peroxidase in the pulmonary antioxidant system (7).

In our study serum selenium levels in asthmatic patient were significantly lower than the treated group. The serum selenium levels established significantly higher after 4 week of treatment also improve the symptoms that may be due to the antioxidant effect of vitamin A, E&C containing of celery seed as well as lemonen (8).

The demulcent effect of honey affect the pulmonary function, the honey thins out accumulated mucus and helped in its elimination from respiratory passage, also it tones up the pulmonary lining and thereby preventing the production of mucus in future. The FEV₁ and FVC values reflect the effect of honey on respiratory tract.

Superoxide dismutase enzyme is one of these enzyme .This enzyme is widely spread in the aerobic cells and protects them with the dismutation of the superoxide radicals; this enzyme mutates superoxide radicals to hydrogen peroxide and molecular oxygen. Copper and zinc containing superoxide dismutase (Cu - Zn SOD) is a type of this enzyme.

Two main changes might be considered in the lung with decreased serum zinc level (9, 10), The first is lowering the stability and integrity of the cell membrane leading to release of enzymes and histamine from lysosome and mast cell respectively, so the ability of the membrane to resist free radicals is impaired . The second changes is low Zn lead to reduce the ability of Cu - Zn SOD to scavenge free radicals. When the contents of Cu & Zn decrease Cu - Zn SOD activity also diminishes then increase lung injury.

Our study was showed relatively low blood levels of zinc in asthmatic and this result is similar to that found by (11).

In experimental studies there was a characteristic decline in serum zinc level in chronic inflammation (12).

In our study Zn was in normal level after treatment with mixture of celery seed , can not differences in zinc values between pre and post treatment , on the other hand copper levels were higher than the treated subject (but within normal range) . In other study , serum copper has been found to be elevated while serum zinc level were found to be low (13) .

It is debatable whether an increase in copper level has an impact upon SOD absorption. However, it is clear that a decrease in this element impairs the enzyme activity causing oxidative stress.

As a result serum Se & Zn were found in low level and significantly increased after treatment with celery seed that increase the antioxidant effect. Se & Zn rich diet which is thought to increase the antioxidant system activity can be useful in the treatment of the airway inflammation.

Also the changes in trace element may be the effect of chronic disease state and do not associate with the cause of the disease. Further studies on the relation between the allergic disease and trace elements are needed to understand the details of this condition.

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Table (1) the effect of mixture on selenium, zinc and copper level in serum

Parameters	Pretreatment	Post treatment
Selenium $\mu\text{g /dl}$	42.60 \pm 9.21	66.25 \pm 8.61
Zinc $\mu\text{g /dl}$	87.13 \pm 12.29	123.00 \pm 22.35
Copper $\mu\text{g /dl}$	139.3 \pm 27.49	127.27 \pm 32.42

* Results were significant at ($p < 0.05$)

Table (2) the effect of mixture on pulmonary function parameters

Parameter	Pretreatment	Post treatment
FEV ₁ %	62.68 \pm 12.26	80.77 \pm 9.08
FVC %	58.95 \pm 12.03	83.18 \pm 9.82