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# Use of Herbs by the Patients with Diabetes in Kayseri, Turkey

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**Abstract:** Herbal medicines, products and therapies are a subject of great public interest both nationally and worldwide. Use of herbal therapy is common among patients with diabetes. The purpose of this study was to determine the consumption rate, duration and methods of herbs and alternative therapies used by the patients with diabetes in Kayseri, Turkey. This cross-sectional study was performed with 400 volunteer patients with diabetes. A face to face interview was conducted between January-May, 2003. The ratio of the herb used, herb species used, pattern of use, demographic characteristics of users and nonusers were determined. 25 % of the 400 respondent with diabetes reported herb use. There was a significant difference for Body Mass Index (BMI) of users and nonusers ($X^2$=13.01, p<0.05). A positive correlation was found between herb use and educational levels (r=0.106, p<0.05). The herbs mostly used by the patients were nettle (28%), thyme (27%), parsley (12%) and jujuba (12%), respectively. The most common pattern of herb consumption was boiling the herbs and drinking the hot water extract (74%), this was followed by adding to foods (12%). Of 39% of the users self-reported that the herb decreased their blood glucose levels. Patients with diabetes tended to use herbs. They need to be educated by the health professionals.

**Key words:** Complementary alternative medicine, diabetes, herbs

## Introduction
Recently, herbs and other natural products have been used in the treatment and control of diabetes mellitus. Herbs and other plant products are considered more natural, economical and safe in the treatment of diabetes mellitus. It is really a kind of home treatment and can be a part of usual diet. Control of diabetes by natural products is becoming popular more and more and is more appropriate for use in developing countries. These products especially the herbs may have a direct role in the prevention and control of diabetes (Khan and Safdar, 2003). There are limited studies on the consumption pattern and effectiveness of herbs in Turkey. Therefore, this study was performed to determine the consumption rate and pattern of herb consumption by the patients with diabetes and to evaluate the benefits of herbs.

## Materials and Methods
**Cross-sectional and descriptive design:** This cross-sectional study was performed at the outpatient clinic of endocrinology in Kayseri, Turkey with 400 volunteer patients with diabetes between January and May 2003. Their ages were ranged from 18-97 years (53.9±14.8). 55.8% of them were female and 44.2% of them were male. Patients who were diagnosed as diabetes according to the criteria of World Health Organization (HbA$_{1c}$>7.5; fasting blood glucose >8 mmol/L) were included in this study. Children, pregnant and lactating women were excluded. In a previous study conducted in

this region on the prevalence of diabetes have shown that prevalence of diabetes was about 5% (Öztürk et al., 2000). The deviation level for diabetes prevalence was ±2% and the representative status of this study group for the population was calculated with the formulae of n = N.$t^2$. p.q/$d^2$ (N-1) $t^2$.p.d (N: the individual number in the universe; n: the individual number in the study group; q: the non-prevalence of the event; t: table constant, d: the deviation of the event according to its prevalence.

**Interviews:** Each patient was interviewed for 8 to 10 minutes by the same interviewer at the outpatient clinic. Before the interview began, each patient was oriented to the structure of the standardized interview and gave verbal consent. Participants were asked the following "When was the illness diagnosed?" "Did you use herbs for the treatment?" Herb species used, pattern of use, duration of use, and perceived benefits were also asked to the patient by a form. Demographic information (age, sex, and education level) was recorded for each patient. Height and weight of each patient were measured, and body mass index (BMI) was calculated (in kilograms per squared meter). The ratio of the herb consumption by the patients and herb species used and pattern of use were also determined.

**Statistical analysis:** The study participants were categorized as users and nonusers. All analyses were conducted using SPSS statistical software package (version 9.0 for Windows; SPSS Inc., Chicago, IL, USA).

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Table 1: Demographic characteristics of the herb users and non-users with diabetes

| Demographic characteristics | Users (n= 100) | Non-users (n=300 ) | Total sample (n=400) | Sig-nific-ance |
|---|---|---|---|---|
| Age | 54.6±13.5* | 53.7±15.2 | 53.9±14.5 | NS |
| Gender | | | | |
| Male | 38 (38.0)+ | 139 (46.3) | 177 (44.2) | NS |
| Female | 62 (62.0) | 161 (53.7) | 223 (55.8) | |
| Education | | | | |
| Non-illiterate | 34 (34.0) | 73 (24.3) | 107 (26.8) | NS |
| Illiterate | 12 (12.0) | 32 (10.7) | 44 (11.0) | |
| Primary school | 23 (23.0) | 88 (29.3) | 111 (27.8) | |
| Secondary school | 18 (18.0) | 38 (12.7) | 56 (14.0) | |
| High school | 9 (9.0) | 48 (16.0) | 57 (14.2) | |
| University | 4 (4.0) | 21 (7.0) | 25 (6.2) | |

*Mean±standard deviation. NS: Not significant + Number in parenthesis refer to the percentage

Table 2: Herb consumption and BMI of diabetic patients

| BMI | Users (n=100) | Non-users (n=300) |
|---|---|---|
| 19.9 and lower | 1 (1.0)* | 24 (8.0) |
| 19.9 - 24.9 | 26 (26.0) | 102 (34.0) |
| 25.0 - 29.9 | 42 (42.0) | 98 (32.7) |
| 30.0 - 34.9 | 23 (23.0) | 51 (17.0) |
| 35.0 - 39.9 | 8 (8.0) | 19 (6.3) |
| 40.0 - 44.9 | - | 3 (1.0) |
| 45.0 - and higher | - | 3 (1.0) |
| | $X^2$=13.015, p<0.05 | |

*Number in parenthesis refer to the percentage.

Student's t - test or Chi-square test were used for statistical comparison where appropriate. Descriptive statistics identified the demographic characteristics; $Chi^2$ tests were performed for comparisons between users and non-users. The Pearson's correlation between age, educational level, BMI and herb use were determined. For all the analyses, a P value less than 0.05 was considered significant.

## Results

Four hundred respondents with diabetes, of whom 25% reported herb use. There was no statistically significant sex difference for herb consumption. Among users, 34% was non-illiterate, while 4% was university graduates and the remaining had different educational level (Table 1). There was no statistically significant sex difference for herb consumption. There was a significant difference for BMI between herb users and non-users ($Chi^2$=13.01, p<0.05) (Table 2). No relationship between herb consumption and age (r = - 0.025) and BMI (r = - 0.079) were found. A positive significant correlation was found between educational level and herb consumption (r = 0.106, p<0.05) (Table 3).

The most common used herbs were nettle (28.0%), thyme (27.0%), parsley (12%) and jujuba (12%) (Table 4). The most common pattern of the herb consumption was boiling the herbs and drinking the hot water extract (74%), this was followed by adding to foods (12%). Of

Table 3: Pearson correlation between herb consumption and demographic characteristics of diabetic patients

| Demographic characteristics | Herb consumption |
|---|---|
| Educational status | 0.106* |
| Age | -0.025 |
| BMI | -0.079 |

* p<0.05

39% of the users reported that the herb decreased their blood glucose levels.

## Discussion

Plant derivatives with hypoglycemic properties have been used in folk medicine and traditional healing systems around the world (Yeh *et al.*, 2003). Various herbs are also widely used in Turkey, therefore this study was performed.

Individuals with diabetes were 1.6 times more likely to use Complementary Alternative Medicine (CAM) than individuals without diabetes (Egede *et al.*, 2002). Yeh *et al.* (2002) reported that 57% of the patients used alternative therapy as CAM and 7% used as herbs. In a study performed in Saudi Arabia, the rate of the herb use was determined as 56% (Rowais, 2003). Gözüm and Unsal (2004) reported that use of herbal therapy is most common among women and patients with chronic health problems in eastern part of Turkey. However, in this study, a relatively lower herb usage rate was found in Kayseri. Although no statistically significant difference was found between sex and herb usage, herb consumption was higher in female than males as indicated in previous studies (Gözüm and Ünsal, 2004; Jia *et al.*, 2003). There was a significant difference between educational levels and herb consumption.

The herb species used for diabetes vary between districts. Rowais, 2003, showed that the most commonly used herbs were mursh, black reed, helteet, fenugreek and alcos in Saudi Arabia. In China, 200 special herbs were used (pumpkin, wheat, lotus root and bitter melon) on this purpose (Jia *et al.*, 2003). In India, herbs like *Momardica charantia Linn*, *Trigonella foenum graecum* were accepted scientifically to exert antidiabetic effects. These effects of herbs were probably thought to be caused by the stimulation of the regeneration of beta cells and extrapancreatic effects (Saxena and Vikram, 2004).

Kayseri is a city in Central Anatolia. In Central Anatolia, a number of characteristical medical herbs were grown up in plateaus and mountains. The herbs of Iran-Turan flora dominate this district. Herbs like astragalus and ferula species are typical medical herbs of the district. Jujuba is a herb grown up and used by diabetics in the district. It contains mucilage, vitamin C and pectin (Baytop, 1984). Erenmemisoglu *et al.* (1995) demonstrated the hypoglycemic effects of the water of jujuba leaves on rats. In the present study, diabetic patients used 12% and 28% of the jujuba and nettle

Table 4: Herbal medicines most frequently used by the patients with diabetes in Kayseri, Turkey

| English name | Turkish name | Botanical name | Reported properties and uses | Frequency (%) |
|---|---|---|---|---|
| Nettle | Isirgan | Urtica dioica and urens | Immunity stimulant, arthritis, cancer | 28 |
| Thyme | Kekik | Thymus vulgaris | Antiseptic | 27 |
| Parsley | Maydanoz | Petroselinum crispum | Diuretic, antiseptic, urinary infections | 12 |
| Jujuba | Hünnap | Zizyphus jujuba | Antidiabetic | 12 |
| Sour pomegranate | Nar eksisi | Punica granatum | Antitenial | 10 |
| Lettuce | Marul | Lactucae sativae | Diuretic, laxative | 6 |
| Jerusalem artichoke | Yerelmasi | Helianthus tuberosus | Antidiabetic | 5 |

leaves, respectively. Nettle leaves contain potassium salts, formic acid, histamine, acetyl choline and vitamin C. It is known that some fractions extracted from this herb exert anticoagulant effects (Baytop, 1984). However, there is no study to the author's knowledge, demonstrated its hypoglycemic effect on diabetes.

In this study, 15.2% of the patients stated that the herbs they used decreased their blood glucose levels. However, it is not possible to state whether these effects were caused by nettle and jujuba leaves or different herb consumption and traditional treatment methods. In conclusion, there is no sufficient knowledge on the reliability and validity of herbs. It may be recommended that experimental studies attempted to determine the hypoglycemic effects of herb are needed.

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