

## PREVALENCE OF USING HERBAL DRUGS AS ANTI-DIABETIC AGENTS IN MEDINA, KINGDOM OF SAUDI ARABIA

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### ABSTRACT

**Objectives:** The present study was conducted to investigate role of herbal drugs for the treatment of diabetes in Medina region of KSA.

**Methods:** A cross-sectional study was conducted among the patients of two major hospitals and two primary health care centers of Medina region of KSA, where 339 diabetic patients were interviewed through a predesigned questionnaire that contains items related to diabetes and the use of herbs. The results were statistically analyzed using Statistical Package for the Social Sciences software (SPSS software version 18) under windows 7; simple descriptive analysis was done in the form of percentage. **Results:** The survey response rate was 92%. In

the current study, 209 (62%) patients were found to use 37 herbal drugs and 130 (38%) did not use any herbs to treat their diabetes. From the herbal drugs user 73.2% were male while 36.8% were female diabetic patients. Most of the herbal drugs users were Saudi Nationals (90.2%). The most commonly used herbs were Olive, Fenugreek, Green tea, Lupin, Bitter guard, Garlic, Myrrh, Thyme and Pomegranate. Olive oil/ olive leaves, Fenugreek seeds and Green tea leaves were used by twenty-six, twenty and fourteen patients respectively. **Conclusion:** Present study revealed that 62% diabetic patients use herbs to treat diabetes. This study showed that folk medicine is still practiced among diabetic patients. It is further added that knowledge about herbal drugs in terms of efficacy, safety, risks, interactions and toxicities, should be updated to the healthcare professional through continued scientific programs.

**KEYWORDS:** Herbal drugs, diabetes, folk medicine, efficacy and toxicities.

## INTRODUCTION

Diabetes mellitus (DM), commonly known as diabetes, is one of the world's oldest known diseases. Diabetes is growing epidemic around the world, which is considered as chronic incurable condition, caused by insulin deficiency that affects 10% of the population.<sup>[1-3]</sup> According to World Health Organization (WHO) 171 million people worldwide suffered from diabetes in the year 2000 and by 2030 it is expected to reach 366 million populations worldwide.<sup>[4,5]</sup> The regional prevalence of diabetes in Middle Eastern and North Africa (MENA) countries is 7.7%. The Kingdom of Saudi Arabia (KSA) is the largest country in Middle East and rapidly developing with a change in life style of people due to modernization and fast food habits.<sup>[6]</sup> High energy, high fat diets and physical inactivity of people lead to conserve excess energy in form of fat which promotes insulin resistance.<sup>[7,8]</sup>

Diabetes is considered as a major health problem in Saudi Arabia, the prevalence of diabetes in Saudi Arabia is 23.7%.<sup>[7]</sup> Many traditional and conventional treatments were used for the treatment of diabetes in many communities.<sup>[9,10]</sup> Saudi Arabia is a rich country in terms of biodiversity, containing herbs, shrubs and trees for edible and medicinal purpose.<sup>[11,12]</sup> Numerous scientific work on the efficacy and safety of herbal drugs for the treatment of major disorders in Saudi Arabia and other Arabic country, are mentioned in literature.<sup>[13-21]</sup> Several surveys were conducted in different regions of Saudi Arabia like Mecca, Taif, Alrass, Qassim, Riyadh and others showed that a large number of herbal drugs are used for the treatment of diabetes.<sup>[20,22-24]</sup>

Traditional uses of plants for the treatment or management of many diseases is ancient but still available among the local and tribal people in Saudi Arabia. People living both in rural and urban areas depend upon herbal remedies for the treatment of diabetes.<sup>[20]</sup> These information and traditional medicines are vanishing day by day with the advancement in treatment and modernization. It is therefore, an urgent need to recollect this indigenous knowledge before their disappearance from the kingdom.<sup>[25]</sup> Hence in the present study we tried to document herbal drugs used by diabetic patients in Medina region of Saudi Arabia.

## MATERIALS AND METHODS

A self-administered questionnaire was developed to meet the objectives of the study by one of the researchers of the group in Arabic language for local Medina patients so that they can easily understand and respond accordingly. Template contained items related to diabetes and the use of herbs. Cross-sectional study was conducted among two major hospitals (National

Guard Health Affairs -Prince Mohammed Bin Abdul Aziz Hospital and Anti-diabetic center, King Fahd Hospital) and two primary health care centers (Bab AL.Majedi PHC center and Alazhari PHC center) of Medina region of KSA. The Study was performed by second author of the study with the help of patient counselor and nurses in the hospital's clinics for three months during October to December 2014.

### ***Study design***

In this cross-sectional study, self-administered questionnaires were disseminated directly to 339 diabetic patients in Medina, KSA. One of the researchers distributed the questionnaires to the diabetic patients with an explanatory cover letter and prepaid return envelope. After explaining the objective of the study, the researcher requested that the patients complete a consent form to participate in this study.

### ***The instrument***

The questionnaire comprises three sections. The first section consists of demographics, including gender, nationality, age and qualification. Section two focuses on the diabetic type, duration, treatment, follow up and control of diabetes. The third section of the questionnaire focus whether they had used herbal medicine or not. If the answer was yes to the last question, then they were asked further questions regarding the herbal drugs such as its types, frequency of use, parts of herb, its side effects and patient satisfaction with it.

### ***Data analysis and ethical approval***

Completed questionnaires were coded, reviewed for accuracy, entered into a database in Statistical Package for the Social Sciences software (SPSS software version 18) under windows 7; simple descriptive analysis was done in the form of percentage. Descriptive statistics were applied and results were presented as numbers and percentages. The study was approved by the research and ethics board of Buraydah College, Al- Qassim, KSA.

## **RESULTS**

The demographic data of the diabetic patients was displayed in Table 1. The survey response rate was 92%. The patients who did not give response about the questionnaire, excluded from the study (8%). Besides them total numbers of diabetic patients interviewed were 339, out of them only 209 (62%) had used herbal drugs and remaining 130 (38%) did not use any herbal drugs. In 209 patients, male patients were 153 (73.2%) and females were 56 (26.8%). Most of the patients (41.6%) who used herbs were more than 50 years old. The results of research

survey were documented in Table 2, which showed that 37 herbal drugs were used by diabetic patient of Medina. The most commonly used herbs were Olive (Zyton), Fenugreek (Helbah), Green tea (Shai akhdar), Lupin (Terrmece), Bitter guard (Khyar mor), Garlic (Thom), Myrrh (Morr), Thyme (Za'tar) and Pomegranate (Roman). Olive oil/ olive (Zyton) leaves, Fenugreek (Helbah) seeds and Green tea (Shai akhdar) leaves were used by 12.44%, 9.57% and 6.7% diabetic patients respectively.

**Table 1: Basic demographic characteristic of diabetics who used herbs.**

| Variable    |                   | Frequency | Percentage |
|-------------|-------------------|-----------|------------|
| Gender      | Male              | 153       | 73.2       |
|             | Female            | 56        | 26.8       |
| Age         | 10-20             | 5         | 2.4        |
|             | 20-30             | 18        | 8.6        |
|             | 30-40             | 16        | 7.7        |
|             | 40-50             | 27        | 12.9       |
|             | 50+               | 87        | 41.6       |
| Nationality | Saudi Arabian     | 189       | 90.4       |
|             | Non-Saudi Arabian | 20        | 9.6        |

**Table 2: List of traditional drugs used by diabetic patients in Medina, Saudi Arabia.**

| S. No. | Arabic Name | English/Common Name | Scientific Name                     | Family        | Part Used | Used by patients |
|--------|-------------|---------------------|-------------------------------------|---------------|-----------|------------------|
| 1.     | Alja'dah    | Germander           | <i>Teucrium fruticans</i> L.        | Lamiaceae     | All parts | 1                |
| 2.     | Alsheih     | Wormwood            | <i>Artemisia absinthium</i> Mill.   | Asteraceae    | All parts | 1                |
| 3.     | Bagdonece   | Parsley             | <i>Petroselinum crispum</i> (Mill.) | Apiaceae      | Leaves    | 2                |
| 4.     | Bamyah      | Okra                | <i>Abelmoschus esculentus</i> L.    | Malvaceae     | Fruit     | 4                |
| 5.     | Banjar      | Beet                | <i>Beta vulgaris</i> L.             | Amaranthaceae | Fruits    | 2                |
| 6.     | Bortogal    | Orange              | <i>Citrus sinensis</i> (L.) Osbeck  | Rutaceae      | Fruits    | 4                |
| 7.     | Dobah       | Pumpkin             | <i>Cucurbita maxima</i>             | Cucurbitaceae | Fruits    | 6                |
| 8.     | Enab        | Grapes              | <i>Vitis vinifera</i> L.            | Vitaceae      | Leaves    | 2                |
| 9.     | Fejel       | Radishes            | <i>Raphanus sativus</i> L.          | Brassicaceae  | Roots     | 2                |
| 10.    | Gerfah      | Cinnamon            | <i>Cinnamomum zeylanicum</i> L.     | Lauraceae     | Barks     | 6                |
| 11.    | Jirab fruit | Grapefruit          | <i>Citrus paradise</i> Macfad.      | Rutaceae      | Fruits    | 2                |
| 12.    | Habah sodah | Black cumin         | <i>Nigella sativa</i> L.            | Ranunculaceae | Seeds     | 2                |
| 13.    | Handal      | Colocynth           | <i>Citrullus colocynthis</i> L.     | Cucurbitaceae | Fruits    | 2                |
| 14.    | Helbah      | Fenugreek           | <i>Trigonella foenum-graecum</i> L. | Fabaceae      | Seeds     | 20               |
| 15.    | Jarjeer     | Arugula             | <i>Eruca sativa</i> Mill.           | Brassicaceae  | Leaves    | 2                |
| 16.    | Jawafah     | Guava               | <i>Psidium guajava</i> L.           | Myrtaceae     | Fruits    | 2                |
| 17.    | Kamethrah   | Pear                | <i>Pyrus</i>                        | Rosaceae      | Fruits    | 1                |
| 18.    | Kamoon      | Cumin               | <i>Cuminum cyminum</i> L.           | Apiaceae      | Fruits    | 8                |
| 19.    | Khass       | Lettuce             | <i>Lactuca sativa</i> L.            | Asteraceae    | Leaves    | 6                |
| 20.    | Khyar mor   | Bitter guard        | <i>Momordica charantia</i> L.       | Cucurbitaceae | Fruits    | 12               |
| 21.    | Korkom      | Curcuma             | <i>Curcuma longa</i> L.             | Zingiberaceae | Roots     | 2                |
| 22.    | Koromb      | Cabbage             | <i>Brassica oleracea</i> L.         | Brassicaceae  | Leaves    | 6                |
| 23.    | Maramiah    | Alemramip           | <i>Salvia officinalis</i> L.        | Lamiaceae     | Leaves    | 4                |

|  |             |             |                                    |                |              |     |
|--|-------------|-------------|------------------------------------|----------------|--------------|-----|
| 24.  | Morr        | Myrrh       | <i>Commiphora myrrha</i> (Nees)    | Burseraceae    | Leaves/bark  | 10  |
| 25.  | Rashad      | Peppergrass | <i>Lepidium</i>                    | Brassicaceae   | Seeds        | 1   |
| 26.  | Roman       | Pomegranate | <i>Punica granatum</i> L.          | Lythraceae     | fruits Juice | 12  |
| 27.  | Sabbar      | Cactus      | <i>Carnegia gigantean</i> Engelm.  | Cactaceae      | Leaves       | 2   |
| 28.  | Shai akhdar | Green tea   | <i>Camellia sinensis</i> L. Kuntze | Theaceae       | Leaves       | 14  |
| 29.  | Tallh       | Acacia      | <i>Senegalia greggii</i>           | Fabaceae       | Leaves       | 3   |
| 30.  | Teen        | Fig         | <i>Ficus carica</i> L.             | Moraceae       | Fruits       | 2   |
| 31.  | Terrmece    | Lupin       | <i>Lupinus albus</i> L.            | Fabaceae       | Seeds        | 12  |
| 32.  | Thom        | Garlic      | <i>Allium sativum</i> L.           | Amaryllidaceae | Fruits       | 4   |
| 33.  | Toot        | Blueberry   | <i>Vaccinium corymbosum</i> L.     | Ericaceae      | Leaves       | 8   |
| 34.  | Yanasoon    | Anise       | <i>Pimpinella anisum</i> L.        | Apiaceae       | Fruits       | 2   |
| 35.  | Za'tar      | Thyme       | <i>Thymus vulgaris</i> L.          | Lamiaceae      | All parts    | 4   |
| 36.  | Zanjabeel   | Ginger      | <i>Zingiber officinale</i> Roscoe  | Zingiberaceae  | Roots        | 10  |
| 37.  | Zyton       | Olive       | <i>Olea europaea</i> L.            | Oleaceae       | Oil/ Leaves  | 26  |
| Number of patients which use above herbal drugs      |             |             |                                    |                |              | 209 |
| Number of patients which do not use any herbal drugs |             |             |                                    |                |              | 130 |
| Total diabetic patients                              |             |             |                                    |                |              | 339 |

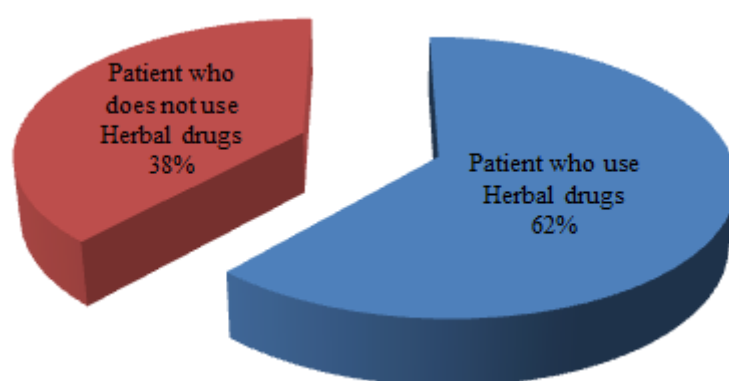


Fig. 1: Percentage responses of diabetic patients with herbs.

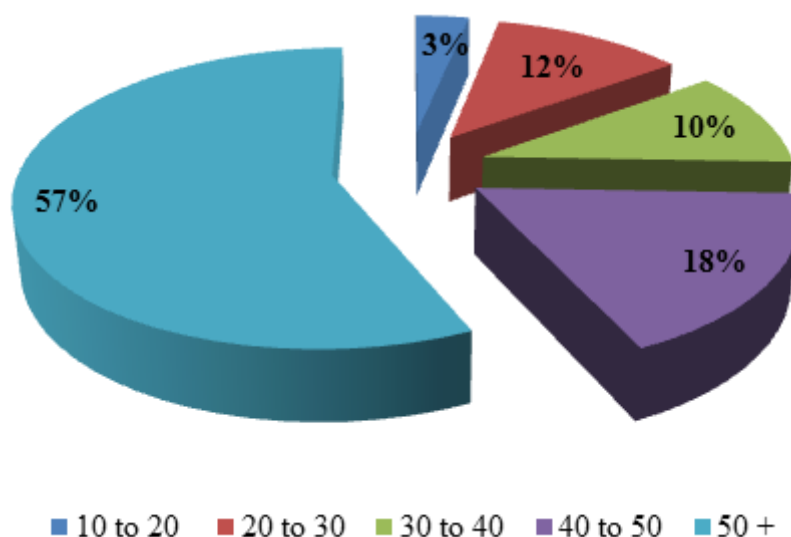
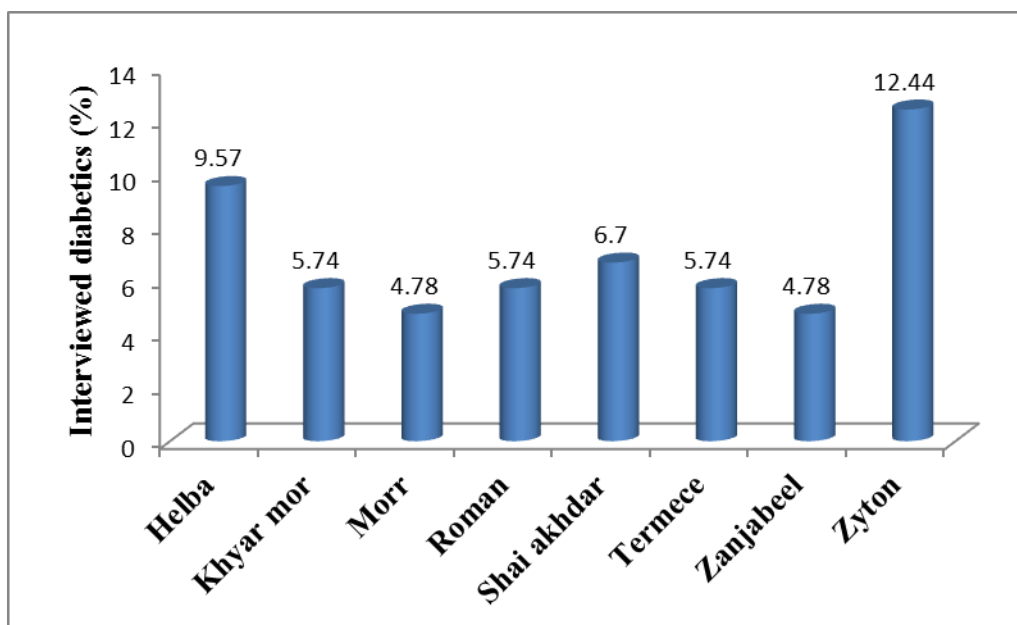


Fig. 2: Demographic distribution of diabetic patients who used herbs.



**Fig. 3: Most frequently used herbal drugs by interviewed diabetic.**

## DISCUSSION

Many patients are choosing to use herbal drugs and inevitably this interest has an effect on theoretical and clinical applications of medicine. The global rate of diabetic patients using herbal products varies from 17-72.8%. There is a broad spectrum of herbal products in use that varies greatly between countries.<sup>[26]</sup> In the current study 62% diabetic patients in Medina region were found to depend on herbal drugs. The commonly used herbs by the interviewed diabetics were olive, fenugreek, green tea, lupin, bitter guard, garlic, myrrh, thyme and pomegranate which were found to be same with earlier conducted studies in the Middle East<sup>[27,28]</sup> and especially Saudi Arabia.<sup>[9,22,23]</sup> In a Turkish study commonly used herbs were pomegranate and thyme with cinnamon for the treatment of diabetes.<sup>[29]</sup> Cinnamon and ginseng were used together in a combination with Chinese herbs in a study conducted in Taiwan for diabetes.<sup>[30,31]</sup> In a Palestinian study<sup>[27]</sup> almost all the commonly used herbs were found the same as earlier reported studies in Jordan.<sup>[28]</sup> Myrrh was reported in both Saudi<sup>[9,22,23]</sup> and Palestinian<sup>[27]</sup> research studies. Fenugreek, lupin, myrrh, green tea, cinnamon, garlic and nigella were also documented previously in Saudi studies conducted in Taif area.<sup>[23]</sup> In a study conducted in Saudi in Mecca region Fenugreek, olive leaves, and radish were also used by diabetic patients.<sup>[22]</sup> Herbal drugs and its products are diverse in nature so there is an urgent need to pay attention regarding their potential, benefits, dosage, actual risks, toxicities and presence of contamination for all healthcare's professional. The use of herbal drugs by diabetic patients without supervision of healthcare professional can

lead them to stop their already prescribed medications which could lead to drastic consequences.<sup>[9]</sup> In case of unsupervised patients if of herbal drugs was not effective, this could lead to worsening of hyperglycemia or diabetic ketoacidosis. On the other hand, if the herb was highly effective it might lead to hypoglycemia or permanent brain damage in its severe form. The emerging concept of the pharmaceutical care raised untraditional and extended roles for the pharmacist practitioners from just preparation and dispensing of medicines to all aspects that affect therapeutic outcomes of each particular disease and tailor the management to the patient's individual circumstances.<sup>[32]</sup>

## CONCLUSION

In the present study 62% patients were using herbal drugs, so use of herbs is not rare among diabetic patients. This investigation proved that folk medicine is still practiced among diabetic patients. Public awareness through different media and locations about herbal remedies should be done to communicate and the public on the trusted and safe source of information when it is needed. Public campaigns could reduce the demand and misuse of herbal remedies.<sup>[27,30]</sup> Healthcare professionals should encourage diabetic patients to talk regarding the use of herbs as it may affect the outcome and the management of their disease. Knowledge about commonly used herbal drugs and their interaction should be updated to the pharmacists as well as physicians through continued scientific programs. In addition, clinical trials should be applied to study safety, efficacy, toxicities of these herbal medicines.<sup>[33,34]</sup>

## CONFLICT OF INTEREST

The author(s) declare that they have no conflict of interest.

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