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## **Ethnobotanical evaluation of plants used in the traditional treatment of gastrointestinal disease in Erbil-Kurdistan region/Iraq**

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### **ABSTRACT**

Present study was aimed to record the traditionally used medicinal plants, part that are used and frequency of their use by people to treat gastrointestinal diseases in Erbil - Kurdistan region/Iraq. The data on medicinal plants was documented using structured questionnaires and personal interviews. The present study revealed utilization of 39 plants belonging to 24 plant families were determined to be used traditionally in Erbil city for treating gastrointestinal disease. Among all the plant parts fruit and leaves were the most preferred plant parts used by the people. Umbelliferae and Labiatae were the most dominant family reported to be used represented by 4 plant species. Also the gastrointestinal disease for which the traditional plants are mostly used are flatulence, constipation, indigestion while only one plant used to reduce gastric acidity.

**Key words:** Ethnobotany, traditional plants, gastrointestinal disease, Erbil

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### **INTRODUCTION**

Gastrointestinal tract is an important organ in the human body and most susceptible to variety of diseases which impose a substantial influence on morbidity and mortality rates worldwide such as infectious disorders, gastro esophageal reflux, gastroenteritis, constipation, diarrhea, abdominal pain, indigestion and flatulence [1], caused by eating indigestible, irregular foods, adulteration of food, spicy diets and contamination of drinking water [2]. According to World Health Organization (WHO) reports digestive system disorders was the fifth leading cause of global mortality and approximately 100 million people died worldwide in 2012 particularly by diarrhea [3], annually 15,000 deaths occur due to the consequences of peptic ulcer and gastroenteritis is the cause of 5 million deaths per year worldwide. Natural materials specially plants since ancient times used for treatment of various disease, this traditional knowledge is possessed by older generation and few of them transmitted to younger generation [4]. Documentation of the local knowledge through ethnobotanical studies is important to know use plant species for treatment different type of disease and to conserve these natural resources [5]. Plants considered as safe, economical, effective, relatively less toxic, and extensive research is carried out in search for potent drugs of plant origin [6]. Many

studies have been conducted in Kurdistan about most commonly used of the medicinal plants and herbal products [7], for treatment of diabetes mellitus [8], also in different countries people used botanical medicines traditionally worldwide for the prevention and treatment of different pathologies and the efficacy of most of them has confirmed for the treatment of gastro intestinal disease by clinical research [9,10]. However, there has been no comprehensive study of the medicinal plants used to treat digestive system disorders in Erbil city. This study aimed to identify and record the traditionally used plants, part that are used and frequency of their use by people to treat prevalent gastrointestinal diseases in Erbil - Kurdistan region/Iraq.

### **MATERIALS AND METHODS**

**Study area:** The ethno botanical evaluation was carried out in Erbil city during period of November 2014 to February 2015.

**Data collection:** In this study data was collected by randomly distributing self-administered structured questionnaires among different people on the utilization of plants for treatment of gastrointestinal disease. A total of 200 respondents were included in this study. All respondents were assured of confidentiality and anonymity, selected

respondents for the study were aged between 20 and 69 years with different education level. The time taken by people to complete the questionnaire ranged from 20 to 30 min minutes. The questionnaires included questions regarding personal information of the people and questions about the traditional plants they use to treat gastrointestinal disease such as the Kurdish name of the plants, plant parts used, and type of disease used for it. Finally, the data obtained from the questionnaires was analyzed using the Excel 2007 program.

## RESULTS

The results of this study showed that 39 plants belonging to 24 plant families were determined to be used traditionally in Erbil city for treating gastrointestinal disease such as mouth ulcer, gastric ulcer, gastritis, constipation, abdominal pain, nausea and vomiting, etc the results showed in Table 1 arranged in alphabetical order of their common name, botanical names, family, Kurdish name, frequency of their use by people, part used and their traditional uses. The 10 different parts of plant used for the treatment of gastrointestinal diseases are presented in Figure 1. The number of traditionally used plants which belong to 23 botanical families are presented in Figure 2. In this study 13 gastrointestinal disease were found to be treated with medicinal plants the results summarized in Figure 3.

## DISCUSSIONS

Plant remained an important source for treatment of different disease since ancient times. The present study revealed that huge number of plants belong to different family used traditionally in Erbil city for treatment of gastrointestinal disease. *Citrus limonum* and *Olea europaea* were used most frequently (38%) and (32%) respectively by people (Table 1). People in Erbil city used all plant parts in treatment of disease but fruit and leaf use was most frequent followed by seed and aerial part then flower. Rhizome and root of 2 plant used while stem, bark and gum of only one plant (Figure 1). Present results are compatible with study conducted in another country in which fruit and leaf [11-13] are most commonly used part against gastrointestinal disease while in contrast to study [11] in which use of aerial part and seed lower than the ratio recorded in present study. Leaves are the main photosynthetic organ in plants and are considered to be a key component of the natural pharmacy for the synthesis of many active constituents, particularly those that are more pharmacologically active against certain diseases [14]. Often different parts of plant used for

treatment of same disease for example leaf of *Mentha piperita* and root of *Raphanus sativus* used for treatment of indigestion. The Umbelliferae and Labiatae were represented by 4 plant species, followed by Zingiberaceae and Rutaceae by 3 plant species, then Rosaceae, Brassicaceae, Asteraceae, Fabaceae, Malvaceae by 2 plant species while other families only one plant species (Figure 2). Present findings are in agreement with another ethnobotanical study conducted in other country in which Labiatae was found to be most frequently used plant family against gastrointestinal disease, Asteraceae and Fabaceae each represented by two species while Rosaceae are represented by three species [11]. Brassicaceae and Solanaceae 2 plants species [15]. These differences among the use of different families among different cultures due to different traditional beliefs. The wide spread use of the different plants traditionally for treatment gastrointestinal disease in Erbil city may be due to cultural acceptability, physical accessibility, efficacy and economic affordability. 15 of this plants were indicated to be used for treating flatulence and as a laxative separately, 13 for indigestion, 6-2 plant for other problem such as diarrhea, nausea, vomiting, mouth ulcer, gastric pain, etc. While only one plant for reduce gastric acidity (Figure 3). Flatulence and constipation is a medical condition widely spread in Erbil city. Constipation caused by various factors such as excessive intake of antibiotics, lack of exercise less fiber and water intake. *Clostridium* is considered the common causative agent of constipation in many cases while there is no clear evidence about the involvement of other microbes [16]. Traditionally used *Glycyrrhiza glabra* as a laxative supported by previously recorded data by other workers [17] by protect the intestinal lining by increasing the production of mucus, thus alleviating heartburn and ulcers. Laxative effect of *Cassia acutifolia* due to anthraquinone content [18]. All of plants in this study belong to zingiberaceae family such as *Elettaria cardamomum*, *Zingiber officinale* and others used for treatment of flatulence are in agreement with study recorded previously in thailand [19]. A biological study revealed that the active constituents in the essential oils, such as the gingerols in zingiberaceae plants, inhibited a multiplication of the colon bacteria that ferment undigested carbohydrates causing flatulence [20]. Traditionally use of *Musa sapientum* and *Punica granatum* as antidiarrhea and *Curcuma longa* for gastric ulcer supported by previously recorded data in Karen of northern Thailand [19]. Studies on the phytochemical properties showed that the crude extracts of *Punica granatum* seed contain tannins these constituents responsible on antisecretory and antidiarrhoeal activity [21]. Another

pharmacological study revealed that pectins which are found in the cell wall and in intracellular substances in many fruits such as *Musa sapientum*, had therapeutic effects on treating diarrhea [22]. A pharmacological study on *Curcuma longa* found that curcumin, which was the active constituent in this plant, had a beneficial effect on the stomach [23]. However, many other traditional uses seem to be supported by previously recorded data while some of them reported for the first time were not approved scientifically.

## CONCLUSIONS

There are large number of plants used traditionally in Erbil city for treatment of gastrointestinal most of them supported by previously recorded data and clinical study while some of them reported for the first time were not approved scientifically and it is necessary to do more phytochemical screening for main constituents and require clinical studies to explore the potentiality of plants used gastrointestinal disease.

**Table 1: Most commonly plants used traditionally in treatment of gastrointestinal disease in Erbil city**

Common name	Botanical name	Family	Kurdish name	Frequency (%)	Part used	Traditional uses
Anise	<i>Pimpinella anisum</i>	Umbelliferae	Yansun	1	Seed	Flatulence, indigestion
Apple	<i>Malus domestica</i>	Rosaceae	Sew	8	Fruit	Laxative, flatulence
Apricot	<i>Prunus Armeniaca</i>	Rosaceae	Qaisi	2	Fruit	Laxative
Banana	<i>Musa acuminata</i>	Musaceae	Moz	5	Fruit	Antidiarrhea
Cabbage	<i>Brassica oleracea</i>	Brassicaceae	Kalam	1	Aerial part	Gastric ulcer, gastric pain
Cardamom	<i>Elettaria cardamomum</i>	Zingiberaceae	Hel	2	Seed	Flatulence, appetizer
Celery	<i>Apium graveolens</i>	Umbelliferae	Karawz	7	Leaf	Decrease gastric acidity, laxative
Chamomile	<i>Marticaria chamomilia</i>	Asteraceae	Gula Hajela	5	Flower	Laxative, flatulence, abdominal pain
Cinnamon	<i>Cinnamomum zeylanicum</i>	Lauraceae	Darjeen	7	Bark	Flatulence, antidiarrhea
Clove	<i>Dianthus caryophyllus</i>	Myrtaceae	Karanfl	3	Aerial part	Flatulence, nausea
Cucumber	<i>Cucumis sativus</i>	Cucurbitaceae	Khayar	11	Fruit	Laxative
Cumin	<i>Cuminum cyminum</i>	Apiaceae	Zera/ kamon	1	Seed	Flatulence, indigestion
Datura	<i>Datura stramonium</i>	Solanaceae	Tatura	1	Seed	Appetizer
Dill	<i>Anethum graveolens</i>	Umbelliferae	Shweet	2	Leaf	Flatulence
Fig	<i>Ficus carica</i>	Moraceae	Hanjer	3	Fruit	Laxative, IBS
Garden lettuce	<i>Lactuca sativa</i>	Compositae	Khas/Kahu	3	Aerial part	Laxative
Ginger	<i>Zingiber officinale</i>	Zingiberaceae	Zanjafel	22	Rhizome	Nausea and vomiting, mouth ulcer, indigestion,

						IBS, flatulence
Grape	<i>Vitis vinifera</i>	Vitaceae	Tre	5	Leaf, fruit	Laxative, gastric pain
Horse-mint	<i>Mentha longifolia</i>	Labiatae	Pung	9	Leaf	Abdominal pain, flatulence, IBS
Lemon	<i>Citrus limonum</i>	Rutaceae	Lemo	38	Fruit	Indigestion
Lime	<i>Citrus aurantifolia</i>	Rutaceae	Lemo Basre	2	Fruit	Gastric pain, nausea
Liquorice	<i>Glycyrrhiza glabra</i>	Fabaceae	Balak	1	Root	Gastric pain, indigestion, laxative, gastric ulcer
Mallow	<i>Malva parviflora</i>	Malvaceae	Tolka	1	Leaf	Indigestion, IBS, antidiarrhea.
Myrrh	<i>Commiphora myrrha</i>	Burseraceae	Bneshta tal	2	Gum	Mouth ulcer, indigestion, laxative
Oak bark	<i>Quercus persica</i>	Fagaceae	Baru	1	Fruit	Antidiarrhea
Oat	<i>Avena sativa</i>	Poaceae	Alic	4	Aerial part	Laxative
Olive	<i>Olea europaea</i>	Oleaceae	Zaitun	32	Fruit, leaf	Laxative, IBS,
Orange	<i>Citrus sinensis</i>	Rutaceae	Prtaqal	11	Fruit, leaf	Indigestion
Parsley	<i>Petroselinum sativum</i>	Umbelliferae	Maadanos	1	Leaf	Indigestion, flatulence
Peppermint	<i>Mentha piperita</i>	Labiatae	Naana	11	Leaf	Indigestion, nausea, flatulence, mouth ulcer, laxative, gastritis
Pomegranate	<i>Punica granatum</i>	Punicaceae	Hanar	13	Fruit	Antidiarrhea, gastric ulcer, mouth ulcer
Radishes	<i>Raphanus sativus</i>	Brassicaceae	Tur	1	Root, stem, leaf	Indigestion
Roman chamomile	<i>Anthemis nobilis</i>	Asteraceae	Baibun	3	Flower	Abdominal pain, flatulence, appetizer
Roselle	<i>Hibiscus subdariffa</i>	Malvaceae	Chae kujarat	1	Aerial part	Laxative
Rosemary	<i>Rosmarinus officinalis</i>	Labiatae	Jatrai chiae	2	Seed	Gastric pain
Saffron	<i>Corcus sativus</i>	Iridaceae	Zafaran	1	Flower	Flatulence, indigestion
Senna	<i>Cassia acutifolia</i>	Fabaceae	Senamake	3	Leaf	Laxative
Thyme	<i>Thymus vulgaris</i>	Labiatae	Jatra	2	Leaf	Indigestion, mouth ulcer, appetizer
Turmeric	<i>Curcuma longa</i>	Zingiberaceae	Zardachu	1	Rhizome	Gastritis, IBS, flatulence, gastric ulcer

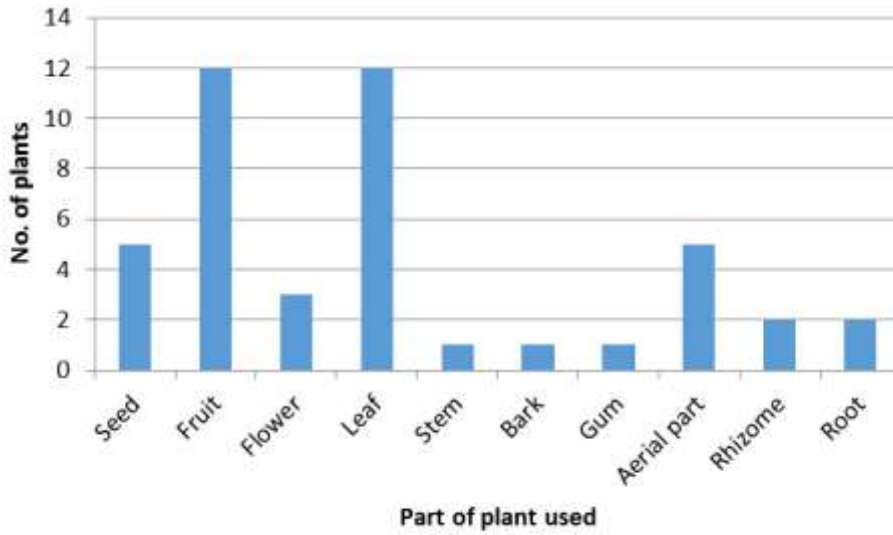


Figure 1: Ratio of plant parts used in treatment of gastrointestinal disease

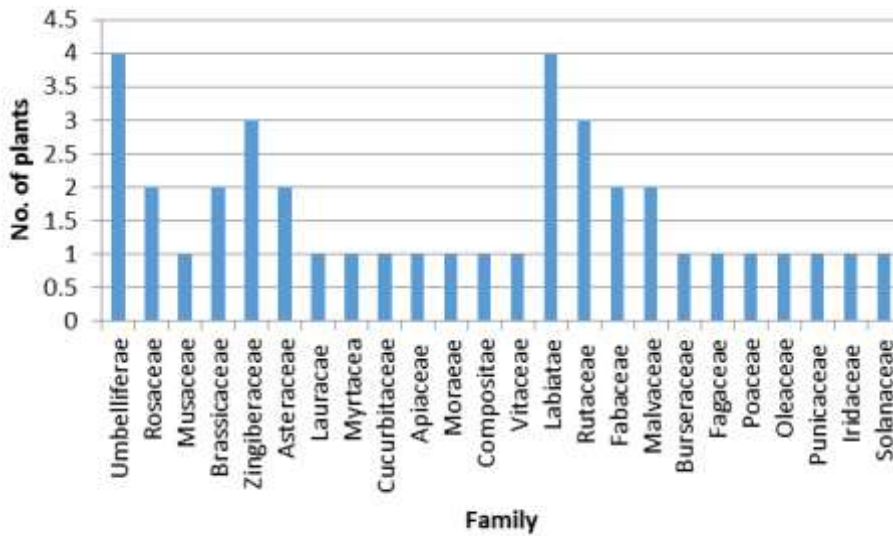


Figure 2: Ratio of plants from each botanical family used in treatment of gastrointestinal disease

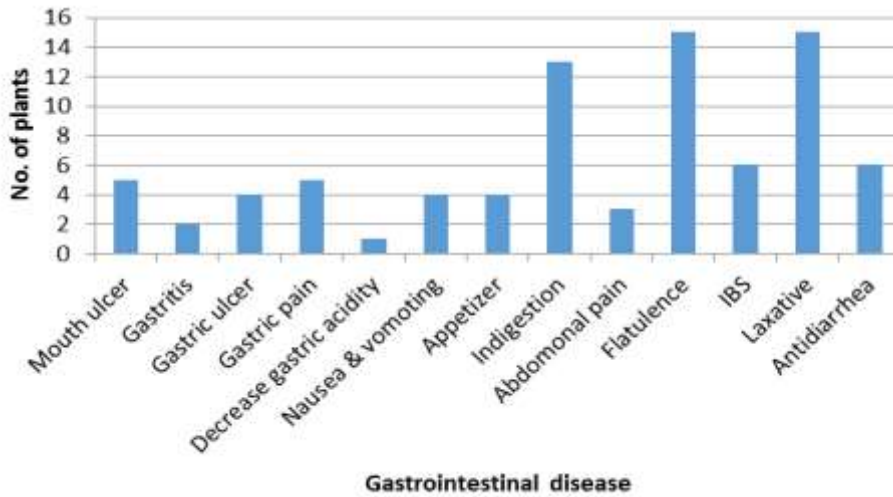


Figure 3: Ratio of plants used in treatment of each gastrointestinal disease

REFERENCES

- [1] Dennis KL et al. *Harrison's principles of internal medicine*, 16th ed.; New York: McGraw - Hill medical publishing division, 2005; pp.1746-1762.
- [2] Olajuyigbe OO, Afolayan AJ. Ethnobotanical survey of medicinal plants used in the treatment of gastrointestinal disorders in the Eastern Cape Province, South Africa. *J Med Plants Res* 2012; 6(18): 3415-3424.
- [3] WHO. World health statistics. Switzerland: WHO Press, 2014.
- [4] Kim H et al. Medicinal efficacy of plants utilized as temple food in traditional Korean buddhism. *J Ethnopharmacol* 2006; 104: 32-46.
- [5] Ugulu I. Development and validation of an instrument to measure university students' attitudes toward traditional knowledge. *J Hum Ecol* 2013; 43(2): 151-158.
- [6] Dharmani P et al. *Allophylus serratus*: A plant with potential antiulcerogenic activity. *J Ethnopharmacol* 2005; 99(3): 361-366.
- [7] Naqishbandi A. Plants used in Iraqi traditional medicine in Erbil - Kurdistan region. *Zanco J Med Sci* 2014; 18(3): 811-815.
- [8] Mutalib YL. Ethnomedical practice used for treatment of Diabetes Mellitus from Hawler City, Kurdistan Region\Iraq. *Int J Pharm Phytopharmacol Res* 2015 (In press).
- [9] Kanner J, Lapidot T. The stomach as a bioreactor: dietary lipid peroxidation in the gastric fluid and the effects of plant derived antioxidants. *Free Radical Biol Med* 2001;31 (11):1388-1395.
- [10] Gurbuz I et al. Anti-ulcerogenic effect of *Momordica charantia* L. fruits on various ulcer models in rats. *J Ethnopharmacol* 2000; 71: 77-82.
- [11] Dogan Y, Ugulu I. Medicinal Plants Used for Gastrointestinal Disorders in Some Districts of Izmir Province, Turkey. *Ethno Med* 2013;7(3): 149-161.
- [12] Saxena N et al. Traditional knowledge of medicinal plants used to cure gastro intestinal problems in Jalaun district of Uttar Pradesh, India. *J Med Plants Stud* 2014; 2(4): 24-28.
- [13] Muralidharan R, Narasimhan D. Ethnomedicinal plants used against gastrointestinal problem in Gingee Hills of Villupuram district, Tamil Nadu., *J Appl Pharm Sci* 2012; 2(10): 123-125.
- [14] Passalacqua NG et al. Contribution to the knowledge of the folk plant medicine in Calabria region (Southern Italy). *Fitoterapia* 2007; 78: 52-68.
- [15] Tariq A et al. Ethnomedicinal evaluation of medicinal plants used against gastrointestinal complaints. *Bio Med Res Int* 2015: 1-14.
- [16] Kobayashi H et al. A botulism case of a 12-year-old girl caused by intestinal colonization of *Clostridium botulinum* type Ab. *Jpn J Infect Dis* 2003; 56(2): 73-74.
- [17] Shibata S. A drug over the millennia: pharmacognosy, chemistry and pharmacology of licorice. *Yakugaku Zassi* 2000; 120: 849-862.
- [18] Kokate CK, Purohit AP, Gokhale SB. *Pharmacognosy*, 25th ed.; Nirali prakashan, 2003; pp. 77.
- [19] Tangjitman K et al. Ethnomedicinal plants used for digestive system disorders by the Karen of northern Thailand. *J Ethnobiol Ethnomed* 2015; 11(27): 1-13.
- [20] Nigam N et al. Ginger (6-gingerol). In: Aggarwal BB, Kunnumakkara AB, editors. *Molecular targets and therapeutic uses of spices, modern uses for ancient medicine*. Singapore: World Scientific Publishing Co. Pte. Ltd, 2009; pp.225-56.
- [21] Jurenka JS. Therapeutic applications of pomegranate (*Punica granatum* L.): a review. *Altern Med Rev* 2008; 13: 128-44.
- [22] Rabbani GH et al. Clinical studies in persistent diarrhea: dietary management with green banana or pectin in Bangladeshi children. *Gastroenterol* 2001; 121: 554-60.
- [23] Chattopadhyay I et al. Turmeric and curcumin: biological actions and medicinal applications. *Curr Sci* 2004; 87: 1325-1325.