

A Review on Medicinal Plants used for Nausea and Vomiting in Persian Medicine

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Abstract

Nausea and vomiting are common digestive symptoms of various illnesses, pregnancy, chemotherapy and motion sickness. They are very unpleasant and affect the quality of life. There are many drugs to control nausea and vomiting but in many cases they are uncontrollable, so helping to new drug discovery is necessary to control of these symptoms. This article shows the plants that used to control these symptoms in Persian medicine books such as: Canon of medicine, Al-Abnieah, Tohfeh, Ekhtiarat, Al-shamel and makhzanul-advieh. About 126 plants were identified to treatment of nausea and vomiting and in this paper 94 plants were presented. The most medicinal plants for the treatment were: Citrus lemon, Berberis vulgaris, Malus domestica, Mentha piperita, Valeriana officinalis and Zingiber officinale.

Index terms— plant, nausea; vomiting; traditional medicine; zingiber officinale

I. Introduction Nausea and vomiting are common digestive problems that affect the quality of life. They also are common problems in patient with chronic disease conditions (40-70%) such as cancer. Nausea and vomiting can be disease or adverse effect of drugs. It can be due to various reasons such as: motion sickness, pregnancy, stomach irritation, chemotherapy, and post-operative factors [1][2][3].

Nausea is an unpleasant subjective sensation and a feeling close to vomiting. Vomiting includes two stages; retching stomach and exit of the material through the mouth [4,5].

1 Fig. 1:

This figure shows some of the factors that initiate vomiting and the neurotransmitter that involved in nausea and vomiting and where the antiemetic drugs involve to preventing nausea and vomiting Nausea and vomiting mechanism is complex. Excessive secretion of saliva occurs while nausea that shows the involvement of autonomic nervous system, so nausea is an event that involves a wide range of central nervous system and gastrointestinal tract [6].

There are two areas of the brain that are important in vomiting; the vomiting centre (VC) and the chemoreceptor trigger zone (CTZ) (Fig. ??). The VC makes network in parts of the brain stem and coordinates the actions of smooth muscles and skeletal functions involved in the vomiting [7,8].

Persian medicine (PM) is a set of knowledge and practices used for the prevention, diagnosis and treatment of diseases [9]. This knowledge has been transferred from generation to generation since ancient times. World Health Organization (WHO) to implement the slogan "Health for all" is intended to develop traditional medicine, this decision was based on two fundamental: first, lack of people (up to 80% in some areas) to access primary health care and second, the lack of satisfaction with the treatment of modern medicine [10][11][12] [13].

2 II. Factors that Initiate Vomiting

There are number of medicines to control of nausea and vomiting (Table 1) that with these antiemetic drugs, vomiting can be prevented in up to 70-80 % of patients [14]. Table 1 shows the modern drugs that use to treatment of nausea and vomiting.

3 III. Methods

In this article we used "comprehensive library of Islamic and traditional medicine software" and from about one thousands book we choose six important Persian Medicine (PM) book such as: Canon of medicine, Al-Abnieah, Tohfeh, Ekhtiarat, Al-shamel and Makhzan-ol-advieh. These books are written between 9-19 centuries. In other hand we searched Scopus, Pubmed, Google scholar and Science Direct for some of these plants that are effective in treatment of nausea and vomiting.

There are several terms that associated with nausea and vomiting in PM such as: "Ghe'y", "Ghesyan", "Tahavo", and "Taghalobenaphs" refers to "vomiting", "nausea", "retching", and "permanent nausea", respectively. Herbal medicines specifications include: scientific, PM and common names, also their part(s) of used, some notifications and references that can use as drug to control of nausea and vomiting in PM were presented in this article.

4 IV. Results and Discussion

In this paper, we investigated six important books of Persian medicine and the result was about 126 plants that use for treatment of nausea and vomiting and in this paper 94 plants were presented.

Table 2 shows the plants that used for curing nausea and vomiting. This table sort by family name of plants and including data on the subject of: scientific name, PM name, and common name, part used, notice and the collection source. a) Lemon (Citrus Lemon) Rutaceae are a great family that has about 1800 species in 160 genera. Essential oil of C. lemon that was extracted with hydro-distillation includes volatile (%85-99) and non-volatile (%1-15). Chemical constituents that identified in C. lemon essential oils are: Limonene (it is the major compound in citrus peels), limonene oxide, γ -terpineol, carvone, carveol, eugenol, spathulenol, caryophyllene oxide, β -terpineol, 3-cyclohexane-1-methanol. A study was conducted to evaluate the effect of aromatherapy essential oils in the control of nausea and vomiting associated with pregnancy. The study was conducted on 100 pregnant women showed that inhaling lemon can be effective in reducing nausea and vomiting in pregnancy.

A study on 180 people in three groups: control group, treated with intramuscular inject of metoclopramide and was treated with lemon peel; results showed that the group who were treated with lemon peel their symptoms were better control.

In a study of 50 women who had undergone caesarean section and vaginal deliveries has been shown that nausea and vomiting in group that used Lemon peel is significantly lower than the control group.

In addition, nasal spray formulation of lemon essential oil (that extracted from peel of Citrus sinensis) has been showed significant effects on the control of nausea and vomiting [123][124][125][126]. Barberry has about 500 species around the world. Berberine and berbamine are the main constituents that found in different species of Barberry. There are several pharmacological and biological effect for B. vulgaris such as: antihistaminic and anticholinergic. These two effects can be helping the improvement of nausea and vomiting [127,128].

5 c) Apple (Malus Domestica)

There are about 100 varieties of apples commercially. Apples contain flavonoids, fibre, pectin, high potassium, low sodium, zero of fat. In a study on 19 patients treated by cisplatin showed that eating three times a day from a diet that includes: vanilla ice cream, cheese and apple sauce can be effective to control nausea and vomiting in this category of people [129, 130].

6 d) Peppermint (Mentha Piperita)

The result of GC-MS analysis of essential oils from hydro-distillation extract of Mentha piperita showed that there are many compounds in the essential oil, such as: camphene, sabinene, α -pinene, β -terpinene, limonene, terpinolene, p-cymene, menthone, menthol, γ -terpineole, trans-carveol, carvone, pipertitone oxide, and β -caryophyllene. Peppermint oil can be effective in controlling nausea and vomiting that caused by chemotherapy. In a study in patients with gynecologic surgery, was shown that peppermint is very effective in reducing nausea and vomiting after surgery.

In another study in 123 patients who is undergoing cardiac surgery, shown that the use of nasal inhaler of peppermint oil can be useful in controlling nausea and vomiting after cardiac surgery [131][132][133].

7 e) Valerian (Valeriana Jatamansi)

Valerian is scattered around worldwide with about 250 species. Valerian contains more than 150 chemical compounds such as; pyridine alkaloids, organic acids and terpenes, in particular valepotriates and esterifies iridoid-monoterpenes, but the main three chemicals that are active are the essential oils, valerenic acid and valenol, valepotriates, and a few alkaloids.

A study about antiemetic effects of *V. officinalis* in chickens has been studied against nausea and vomiting that induced by copper sulphate. The results indicate that valerian has significant effect on the control of nausea and vomiting [134][135][136].

8 f) Ginger (*Zingiber Officinale*)

Ginger liquid and capsules preparations are a herbal medications used to control nausea and vomiting due to chemotherapy, postoperative and pregnancy. Ginger extract because of gingerols and shogaol, effects on stimulate gastric contractions. These effects mainly occur by involving serotonergic 5-HT and 5-HT receptors and cholinergic M receptors [122,137,138].

9 VI. Conclusion

Since nausea and vomiting affect the quality of life and in many patients despite the use of antiemetic agent. We also seen these symptoms, so need for further investigation of the discovery of new drugs is felt, therefore, use the traditional medicine can help us do towards to this goal.

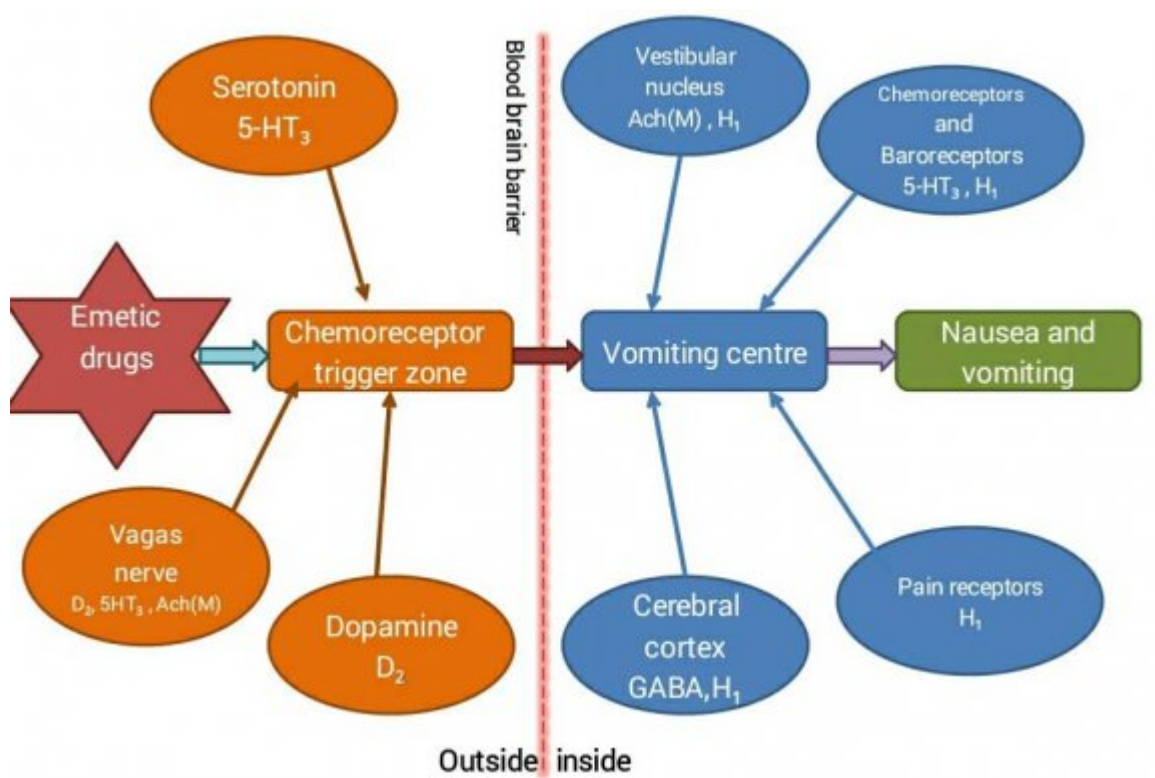


Figure 1:

1

Line	Chemical class	Antiemetic drugs	Route	Neurotransmitters	Side effects	References
	5-Hydroxy-tryptamine (5-HT3) antagonist	Ondansetron Granisetron Dolasetron	Oral, **IV Oral, IV, patch Oral, IV	5-HT	Common side effect includes headaches, flushing, constipation/ diarrhea, malaise/ fatigue and bradycardias.	[15-17]
2	Steroids	Dexamethasone	IV	-	As Anti-nausea drug that is effective in *PONV and chemotherapy	[18, 19]
	Antihistamines	Cyclizine Promethazine	Oral Oral, IV, ***IM	Histamine	Pain while injecting and tachycardia limited its use. It often cause tissue injury including: gangrene, burning.	[20-22]
3	Phenothiazines	Prochlorperazine	IV, IM	Dopamine	Extra-pyramidal effect and administration limited its use. Avoiding using in Parkinson's patient.	[22-24]
4	Phenothiazines	Perphenazine	IV	Dopamine	It has the risk of sudden deaths because of long QT syndrome	
5	Butyrophenones	Droperidol	IV, IM	Dopamine	and torsades de pointes. 0.625-1.25 mg may be more effective for PONV	[25]

Figure 2: Table 1 :

2

Family	Scientific name	Persian name	Common name	Part(s) Used	Notice	References
Acant-	Justicia adha- toda	Ajhose	Tentacle	Root	Its root can use for treatment of nausea	[32-34]
Alliaceae	Allium cepa	Bassal	Onion	Bulb	Cooking or fostering it with vinegar prevents nausea.	[32, 33, 35]
	Mangifera indica	Anbaj (an-beh)	Mango	Peduncle	Peduncle near the leaf with black pepper can stop vomiting.	[32, 33, 36]
	Pistacia intigerrima	Kakera	Crab's claw, Kakkar	Gall	It is more effective in vomiting.	[32, 33, 37]
Anacardiaceae	Pistacia lentiscus	Mastagi	Mastic	Resin	Drinking of it with appropriate spices use for treatment of vomiting.	[32, 33, 38]
	Pistacia vera	Fastagh	Pistachio	Peel and kernel	2.5 g of it with 450 g of water boil in a new pitcher until 1/3 of it remain, then drink it, if to be finished use a new pitcher, it use for treatment of emesis. Macerate external Green peel in water and drink it can prevent vomiting. It can prevent nausea and lock vomiting.	[32, 33, 39]
	Rhus coriria	Sumac	Sumac	Seed and leaf	Seed that be crushed with caraway-seed can calm emetic by drinking with cold water, in a person that always have emesis.	[1, 32, 33]
Apiaceae	Anethum (Um-bel-lif-erac)	Shabat (shivid) Karafs	Dill	Leaf and seed	(12.5 g of the syrup.) It remove/calm emetic.	[32, 33, 40]
	Apium grave-olens			Leaf, seed and root	Eating its cooked leaves and seed remove nausea. Drinking 37.5 g of extract/7.5 g of it/ 12.5 g of cooked root, use for remove emesis. Drinking of leaf and root that mixed with honey can calm emesis.	

[Note: A/

Figure 3: Table 2 :

in pregnancy: a randomised controlled trial.

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nausea and vomiting

.1 Conflict of Interest Statement

We declare that we have no conflict of interest.

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