The role of herbal medicine in the side effects of chemotherapy

El papel de la medicina herbal en los efectos secundarios de la quimioterapia

Habibeh, Bayatmanesh; Naser, Javadi; Tasouj Shirin, Nasrollah Nejhad; Shahparast Fatemeh, Bayat
[1](MSN), Yasuj University of Medical Sciences, Imam sajad hospital, Yasuj, Iran.
[2](MSN), Master of Emergency Nursing, Lorestan University of Medical Sciences, Lorestan, Iran.
[3](MSN), Master of Emergency Nursing, Iran University of Medical Sciences, Iran.
[4](MSN) Department of Nursing, Firoozabad Branch, Islamic Azad University, Firoozabad, Iran.
**corresponding author: Bayat shahparast Fatemeh, Department of Nursing, Firoozabad Branch, Islamic Azad University, Firoozabad, Iran*
https://doi.org/10.5281/zenodo.4074234

Abstract

Nowadays, significant progress has been made in the treatment of cancer. Chemotherapy is one of the most common treatments in cancer management. The use of chemotherapy drugs is generally associated with various serious and non-medical complications. Nausea and vomiting with Chemotherapy are among the most severe side effects and of major concern for patients with cancer. Due to the limited effect and dangerous side effects of taking antiemetic drugs, herbal medicine has been welcomed by patients as one of the most active and complementary Drugs in this field. The contradictory results in this area led the researcher to carry out the present study with the aim of systematically reviewing the effects of medicinal plants on chemotherapy-induced nausea and vomiting. In this structured review, all studies during the years 2008-2018 using keywords chemotherapy, chemotherapy side effects, medicinal herbs, nausea and vomiting and drug side effects from internal and external databases. The data were analyzed using meta-analysis method; the selected articles were collected according to inclusion criteria and finally were examined more closely. After searching the databases and extracting a large number of articles by title and abstract, 360 articles were reviewed and finally 18 articles were reviewed. The herbal remedies used to prevent and treat chemotherapy-induced nausea were ginger, chamomile, mint, cardamom, and onion, respectively. Early detection of side effects in patients can prevent forced discontinuation of treatment or reduce the dose of medications to control side effects that will reduce the effectiveness of treatment. Therefore, it is possible to improve the condition of patients and reduce the side effects of chemotherapy by providing appropriate educational facilities and programs on how to use these herbs. These interventions have also been studied in patients with a wide range of cancers, while each type of cancer has its own chemotherapy protocol and differs in severity from nausea to other protocols, As a result, it is not easy to judge the efficacy of different types of herbs on chemotherapy-induced nausea and to generalize the results to other cancers, so further research is recommended by the researcher.

Key words: Nausea, vomiting, complications, chemotherapy, herbal medicine.

Resumen

Hoy en día, se han logrado avances significativos en el tratamiento del cáncer. La quimioterapia es uno de los tratamientos más comunes en el manejo del cáncer. El uso de medicamentos de quimioterapia generalmente se asocia con varias complicaciones graves y no médicas. Las náuseas y los vómitos con quimioterapia se encuentran entre los efectos secundarios más graves y de mayor preocupación para los pacientes con cáncer. Debido al efecto limitado y los efectos secundarios peligrosos de tomar medicamentos antieméticos, los pacientes han acogido con satisfacción la medicina herbal como una de las píldoras más activas y complementarias en este campo. Los resultados contradictorios en esta área llevaron al investigador a los investigadores a llevar a cabo el presente estudio con el objetivo de revisar sistemáticamente los efectos de las plantas

medicinales sobre las náuseas y los vómitos inducidos por la quimioterapia. En esta revisión estructurada, todos los estudios realizados en Irán y en el extranjero durante los años 2008-2018 utilizaron palabras clave quimioterapia, efectos secundarios de la quimioterapia, hierbas medicinales, náuseas y vómitos y efectos secundarios de medicamentos de bases de datos internas y externas. Los datos se analizaron utilizando el método de metanálisis; Los artículos seleccionados se recopilaron según los criterios de inclusión y finalmente se examinaron más de cerca. Después de buscar en las bases de datos y extraer una gran cantidad de artículos por título y resumen, se revisaron 360 artículos y finalmente se revisaron 18 artículos. Los remedios herbales utilizados para prevenir y tratar las náuseas inducidas por la quimioterapia fueron jengibre, manzanilla, menta, cardamomo y cebolla, respectivamente. La detección temprana de los efectos secundarios en los pacientes puede prevenir la interrupción forzada del tratamiento o reducir la dosis de medicamentos para controlar los efectos secundarios que reducirán la efectividad del tratamiento. Por lo tanto, es posible mejorar la condición de los pacientes y reducir los efectos secundarios de la quimioterapia al proporcionar instalaciones y programas educativos apropiados sobre cómo usar estas hierbas. Estas intervenciones también se han estudiado en pacientes con una amplia gama de cánceres, mientras que cada tipo de cáncer tiene su propio protocolo de quimioterapia y difiere en severidad de náuseas a otros protocolos. Como resultado, no es fácil juzgar la eficacia de diferentes tipos de hierbas en náuseas inducidas por quimioterapia y para generalizar los resultados a otros tipos de cáncer, por lo que el investigador recomienda más investigación.

Palabras clave: náuseas, vómitos, complicaciones, quimioterapia, fitoterapia.

Introduction

As the world population ages, increasing cancer risk behaviors, especially smoking and exposure to stimuli such as chemicals, radiotherapy, inappropriate eating habits and sedentary lifestyles, have become a global problem[1]. According to WHO statistics, the incidence of cancers in developed countries is twice as high in developing countries, but the number of people infected with these diseases annually is higher in developing countries and their disease is far more fatal[2]. Significant advances have been made in the treatment of cancer today. Various therapies, including chemotherapy, radiotherapy, surgery, hormone therapy, immunotherapy, biological therapies, and cryotherapy are used to manage cancer[3]. The use of chemotherapy drugs is generally associated with various serious and non-serious side effects[4]. The purpose of monitoring side effects is to identify unknown drug-related immune problems, to identify and quantify risk factors associated with drug use[5]. Adverse drug information can be used to formulate therapeutic guidelines, make decisions about public health policies, and in pharmacoeconomic research[6]. Evaluation of the side effects of chemotherapy drugs in the hospital provides a good insight into the cause, severity, and extent of the preventable side effects and may prevent the recurrence of similar complications in similar patients[7]. Timely diagnosis of adverse events in patients can improve patient acceptance of treatment and prevent forced discontinuation of treatment or dosing of medications to control adverse events that may reduce the efficacy of treatment itself[8].

The most common side effects of nausea with or without vomiting, diarrhea, hair loss, darkening of the skin and nails, bone marrow suppression, mucositis, dysfunction of the ovaries, hyperuricemia, neuropathy, cardiomyopathy, cystitis hemorrhagic, kidney problems, disorders of electrolyte have been reported[9].

Nausea and vomiting with Chemotherapy are among the most severe side effects and of major concern for patients with cancer, with a prevalence of 54-96%[10]. This complication develops most during the first 24 hours (acute phase) after chemotherapy and has adverse effects on patients' personal and professional lives[11].

Chemotherapy induced nausea can cause many problems for patients, and sometimes these problems are so severe that they can be discontinued[12]. This complicates the physiological, electrolyte-induced diarrhea, altered immune system, nutritional disorder and even esophageal rupture and affects the quality of life and the continued treatment of patients[13]. These problems are consistent even with the widespread use of anti-inflammatory chemicals and the potentiation of the serotonin receptor antagonists and neurokinin-receptor antagonists[14].

Lack of control of nausea and vomiting also results in high costs, which may not refer to direct or indirect costs. Direct costs include increased hospitalization days and additional costs related to medical and paramedical care, as well as indirect costs such as losing or reducing the income of patients, their family members or careers[15].

On the one hand, the widespread use of industrial vomiting drugs is associated with side effects such as complications, extra pyramidal effects of hypertension, headache, etc.[16]. Due to the limited effect and dangerous side effects of these drugs, the tendency towards non-chemical and non-industrial treatments has increased. One of the basic and low-risk measures in this field is the use of herbal medicine as the active ingredient in pomegranate extracts, which has gained much attention over the past decade, according to WHO statistics at present. 80% of the world's population use herbal remedies for treatment[17].

Taking into account factors such as involvement in decision-making, avoidance of toxicity of drugs, lack of health insurance, high cost of drugs, and most importantly, interest in using preventive strategies[18]. Although clinical trials

on new drugs provide information about their serious adverse effects, these reports are inadequate and may not accurately reflect the patient population's experience[19]. In this regard, the researcher intends to conduct a systematic review of the present study with the aim of systematically reviewing the literature and using the author's experiences and the opinions of experts in the study of the effects of medicinal plants on nausea and vomiting caused by chemotherapy.

Methods

In this structured review, all studies at iran and abroad during the years 2008-2018 using keywords chemotherapy, chemotherapy side effects, medicinal herbs, nausea and vomiting and drug side effects from internal and external databases Including Magiran -med lib-SID-iran medex as well as Latin databases such as CINHAL-Pub med, scopus and Elsevier were reviewed and data were analyzed using meta-analysis method and data of selected articles were collected. All articles were reviewed irrespective of the place and place of publication and the way they were done. After reviewing and aggregating all the searched articles, duplicate and unrelated articles were removed. Subsequently, the articles that were included in the study were evaluated according to the inclusion criteria, including: Intervention studies that examined a variety of medicinal plants as a way to prevent and treat chemotherapy-induced nausea. Exclusion criteria included case report and poster data, conferences, descriptive and review articles.

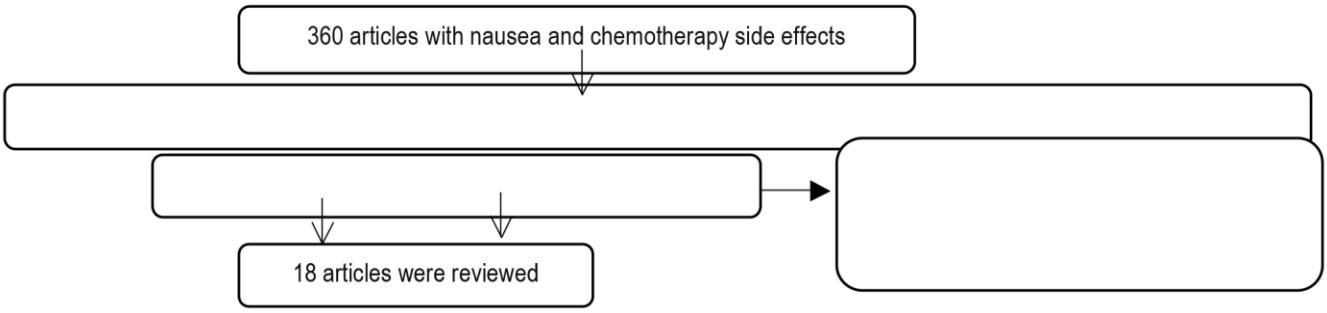
This study had several limitations; the restriction of databases to extract full-text articles limited the access to a large part of the articles despite their title relevance, English language, and intervention. Another limitation was that most of the articles were on acupuncture and electrical stimulation, and there may be articles on chemotherapy-induced nausea and vomiting that may be unavailable due to the lack of full text or English language. They should not be examined. All ethical requirements regarding the correct use of the extracted articles and the rules for publication were respected.

Results

After searching the databases and extracting a large number of articles by title and abstract, 360 articles were reviewed, of which 220 were removed because they did not intervene to combat the adverse effects of chemotherapy.

140 articles were examined in more detail, 122 of which did not specifically address the strategies for dealing with chemotherapy-induced nausea. Finally, 18 articles were included in this review study (PRISMA chart).

Finally, the types of herbs that were used as a strategy for the prevention and treatment of chemotherapy-induced nausea were ginger, chamomile, mint, cardamom, garlic, and onion, respectively, and discussed below.



Discussion

According to what was said types of plants as a way to prevent and treat nausea caused by chemotherapy were used to arrange the use of ginger, chamomile, mint, cardamom and garlic and onions were. The following article analyzes will be discussed in relation to their impact. The following table shows some of the details of these studies (Table).

Table I. Some details of the studies studied

Authors	Herb	Cancer type	Outcome criteria	Effectivness
Internal: Najafi, Montazeri, Ghanbari, Cosmic, Industrial External: Lete, Zick, Manusirivithaya, Leopold, Sontakke	Ginger	Breast and Leukemia	VAS (Visual Analogue Scale)	Taking one gram daily of capsules containing ginger root powder can reduce the number of nausea and vomiting caused by chemotherapy.
Borhani and sanati	Chamomile	Breast Colorectal Lung Leukemia The testicles	VAS (Visual Analogue Scale)	It reduces nausea caused by chemotherapy but has no significant effect on reducing chemotherapy vomiting.
Ahdadi	Mint	Breast	VAS (Visual Analogue Scale)	It reduced nausea in patients, but vomiting showed no effect of ice containing peppermint extract.
Pooter and khalili	Cardamom	Digestive system	VAS (Visual Analogue Scale)	Cardamom inhaled aromatherapy helped standard anti-nausea and vomiting drugs reduce the severity of chemotherapy-induced nausea, but failed to reduce the number of nausea, vomiting, and retching in the acute phase of chemotherapy.
Fakhari	garlic and onion	Digestive system	VAS (Visual Analogue Scale)	

Ginger

Ginger is one of the herbal remedies that is effective in the treatment of nausea and vomiting and does not cause any particular side effects and is used in the manufacture of anti-nausea drugs in the German Pharmacopoeia. The major pharmacological activity of ginger, under the scientific name Gingerbear Afisinyl, is its active ingredients, including gingerols and shagaols. These compounds have anti-vomiting, anti-inflammatory, anti-inflammatory, anti-inflammatory, anti-stress, anti-cancer, reducing prostaglandins and relieving digestive problems. Ginger products exert an anti-vomiting effect through several mechanisms. For example, gingerol and shagols reduce gastric contractions but increase gastrointestinal (gastrointestinal) activity. They also have anti-serotonin effects and exert destructive effects on free radicals that cause vomiting. In the study of Ebrahimi et al.[20] the only side effect of ginger reported by some patients was heart failure, with no significant difference between the two groups. As a result, it can be deduced that ginger is safe and harmless. Clinical trials have provided contradictory results on the effects of ginger on nausea caused by chemotherapy, which makes it difficult to judge its efficacy, as Sontakke[21] indicated the anti-nausea effects of this drug. This is metoclopramide. Ryan[22] and Lete,[23] also acknowledged its positive anti-marital effects, but in contrast Zick[24] and Manusirivithaya,[25] rejected its effects.

On the Use of Ginger in Cancer Patients Sonaki et al.'s[21] study of 50 cancer patients undergoing chemotherapy called ginger, an anti-vomiting agent in chemotherapy-induced nausea and vomiting, found that ginger in nausea and vomiting control. More effective than metoclopramide and there is some research that contradicts findings, Leopold et al.[26] investigating the effect of ginger on postoperative nausea and vomiting on 180 women undergoing genital laparoscopic surgery. The effects of ginger on postoperative nausea and vomiting were different and the severity of the severity was lower and vomiting as compared to controls was observed in the group receiving. In addition, a study of 43 patients with chemotherapy for cancer patients undergoing chemotherapy with the aim of determining the anti-vomiting effects of ginger on nausea and vomiting showed that ginger was effective in reducing late nausea and vomiting due to chemotherapy[24]. Such results may be due to the small size of the statistical population, the limitation of the number of samples and the lack of utilization of the desired product, since the characteristics of previous studies are such that it can affect their results. Each study, for example, examined the effect of the ginger plant on patients with a wide range of cancers, while each type of cancer had its own chemotherapy protocol and severely induced nausea. Other protocols are different, so it is not easy to judge the efficacy of ginger on chemotherapy-induced nausea and to generalize the results to other cancers.

This study is in the study of Ebrahimi et al.[20] in breast cancer patients treated with one-day chemotherapy courses and in many similar internal studies[27-31] with the conditions listed in Table 1 having a significant effect on Control of nausea and vomiting was the study samples. Thus, by comparing the results and generalizing the results, it is recommended that more extensive research be conducted in the future on patients with other types of cancers as well as on cancer patients undergoing several days of chemotherapy, which will be more likely to be different. Based on the results of the research, it can be stated that daily consumption of 1 g capsules containing ginger root powder can reduce the number of nausea and vomiting

caused by chemotherapy. Therefore, it is possible to improve the condition of patients and reduce the side effects of chemotherapy by providing appropriate educational facilities and programs on how to use this capsule. Chamomile

Chamomile

Chamomile is one of the prominent medicinal herbs of chicory and has a special place in ancient medical and medicinal texts as well as in Iranian and Islamic medicine. Various species of this plant and its essential oils have been identified and used in pharmacy.

In a study, Borhani et al[32] investigated the effect of this medicinal plant on nausea and vomiting caused by chemotherapy. According to the results of this study, chamomile extract reduces nausea caused by chemotherapy but has no significant effect on reducing chemotherapy vomiting; on the other hand, Sanaati et al[32]. The severity of nausea in patients with chemotherapy not treated with chemotherapy was only effective in the frequency of vomiting, which is different from the results of this study and may be related to the research method or the characteristics of the subjects.

Mint

Mint is commonly used as a flavoring in food, tea, toothpaste, washing solutions and medications. Menthol in peppermint acts as a gastric relaxant which reduces nausea and vomiting by relaxing the stomach muscles and gastric wall anesthesia. Peppermint also has a calming effect. Aromatherapy with mint also has a psychological effect and reduces nausea and vomiting. In a study by Haddadi et al.[34], ice containing peppermint extract was used as a noninvasive, simple, inexpensive, and non-invasive method along with medication to improve nausea in breast cancer patients. Ice cold causes vasoconstriction in the peripheral parts of the gastrointestinal tract (esophagus and stomach) and reduces the entry of chemotherapeutic agents into these areas, reducing irritation of the gastrointestinal tract and reducing nausea and vomiting. In the present study, the intervention reduced nausea in the patients, as well as the patients' satisfaction, but in the case of vomiting it showed no effect of ice containing peppermint extract. Therefore, it is suggested to apply conditional nausea (before chemotherapy starts) and delayed nausea to other cancer groups.

Cardamom

The scientific name for cardamom is "Elletaria cardamomum". The main chemical components of cardamom include Cineole, Limonene, Terpenyl Acetate, Sabinene, and Linalool. Cardamom is a family of ginger and is commonly known as the spice queen. Cardamom is used to relieve dyspepsia, cough and itching, prevent and treat gastrointestinal disorders, sore throat, lung congestion and oral infections. One of its uses is to relieve nausea and vomiting. Cardamom inhaled aromatherapy can help standard anti-nausea and vomiting medications reduce the severity of nausea caused by chemotherapy. In this regard, Khalili et al.'s[35] study of cardamom aroma was used for this purpose. According to the findings of this study, cardamom inhalation aromatherapy was able to help standard anti-nausea and vomiting medications in reducing the severity of chemotherapy-induced nausea but failed to reduce The number of nausea, vomiting and retching help in the acute phase of chemotherapy. in the study of Potter et al[36], deep breathing more than orange essential oil reduced nausea and retention following stem cell infusion, whereas bergamot aromatherapy did not reduce nausea in children and adolescents under stem cell infusion.

Garlic and onion

Scientific evidence suggests that the medicinal and biological effects of garlic and onions are due to the high amount of soluble compounds in these plants. These special ingredients make garlic and onions. Flavonoids are abundant in onions, but not in garlic. Biological properties of garlic and onion ingredients such as lectin, prostaglandin, fructan, pectin, adenosine, vitamins B6, B2, B1, E, nicotinic acid, fatty acid, glycolipid, phospholipid acid have been essential amino acids for decades. So far, the biological importance and medicinal properties of antifungal, antibacterial, anti-tumor, anti-thrombotic and hypocholesteroleptic properties of saponins such as B chlorogenin have been recognized. Garlic and onions in addition to these biological activities, absorption of AGE from the small intestine can protect patients against the side effects of anti-tumor drugs such as: vomiting, nausea, gastritis, gastric ulcer, bleeding and intestinal ulcer. Onion consumption can also stimulate the gastrointestinal process and increase the rate of absorption of food and decrease the time of passage through the gastrointestinal tract and help improve nausea and vomiting[37].

Conclusions

Timely diagnosis of adverse events in patients can improve patient acceptance of treatment and prevent forced discontinuation of treatment or dosing of medications to control adverse events that may reduce the efficacy of treatment itself. Considering the different body systems, the most common complication in gastric cancer patients was gastrointestinal complications, especially nausea and vomiting. Also, in some patients no treatment was taken to control the complication; however, as noted, many of these complications were promptly diagnosed, correct dose adjustment based on body surface area, kidney and liver function, and weight of the patient and liver. Preventive measures are minimized. Therefore, it is possible to improve the condition of patients and reduce the side effects of chemotherapy by providing appropriate educational facilities and programs on how to use these herbs. Researchers have also studied these interventions in patients with a wide range of cancers,

while each type of cancer has its own chemotherapy protocol and differs in severity from nausea to other protocols, thus It is not easy to judge the efficacy of different types of herbs on chemotherapy-induced nausea and to generalize the results to other cancers easily, so further research is recommended by the researcher.

References

1. Sadat Hoseini A. Effect of Music Therapy on Chemotherapy Nausea and Vomiting in Children with Malignancy. Hayat. 2009; 15(2):5-14

2. Moradi, Y., Mollazadeh, F., Jamshidi, H., Zaker, M.R., Karbasi, F. Outcomes of professional socialization in nursing: A systematic review. Journal of Pharmaceutical Sciences and Research,2017: 9(12), pp. 2468-2472.

3. Matory P, Gholamy R, Dehghan M, Vanaki Z, shirazi M, Binaee N, et al. Efficacy of complementary therapies in reduction of chemotherapy induced nausea and vomiting in breast cancer patients: Systematic review. cmja. 2014; 4(2):831-844

4. Bakhshi M, Memarian R, Azad Fallah P. The Effect of Progressive Muscle Relaxation on the Dosage of Antiemetic Drugs in Cancer Patients Undergoing Chemotherapy. Horizon Med Sci. 2009; 15(3):5-12

5. Bastani F, Khosravi M, Barimnejad L, Haghani H. The effect of Acupressure on Chemotherapy-Induced Nausea and Vomiting among School age Children with Acute Lymphoblastic Leukemia. cmja. 2011; 1(1):1-11

6. Matourypour P, Vanaki Z, Zare Z, Mehrzad V, Dehghan M, Ranjbaran M. Investigating the effect of therapeutic touch on the intensity of acute chemotherapy-induced vomiting in breast cancer women under chemotherapy. Iranian journal of nursing and midwifery research. 2016 May;21(3):255.

7. Safaee A, Zeighami B, Tabatabaee H, Moghimi Dehkordi B. Quality of life and Related Factors in Breast Cancer Patients under Chemotherapy. irje. 2008; 3 (3 and 4):61-66

8. Navari, R.M. and Aapro, M., 2016. Antiemetic prophylaxis for chemotherapy-induced nausea and vomiting. New England Journal of Medicine, 374(14), pp.1356-1367.

9. Eghbali, M., Yekaninejad, M.S., Jalalinia, S.F., Samimi, M.A. and Sa'atchi, K., 2016. The effect of auricular acupressure on nausea and vomiting caused by chemotherapy among breast cancer patients. Complementary therapies in clinical practice, 24, pp.189-194.

10. Yahata H, Kobayashi H, Sonoda K, Shimokawa M, Ohgami T, Saito T, Ogawa S, Sakai K, Ichinoe A, Ueoka Y, Hasuo Y. Efficacy of aprepitant for the prevention of chemotherapy-induced nausea and vomiting with a moderately emetogenic chemotherapy regimen: a multicenter, placebo-controlled, double-blind, randomized study in patients with gynecologic cancer receiving paclitaxel and carboplatin. International journal of clinical oncology. 2016 Jun 1;21(3):491-7.

11. Sommariva S, Pongiglione B, Tarricone R. Impact of chemotherapy-induced nausea and vomiting on health-related quality of life and resource utilization: a systematic review. Critical reviews in oncology/hematology. 2016 Mar 1;99:13-36.

12. Lv C, Shi C, Li L, Wen X, Xian CJ. Chinese herbal medicines in the prevention and treatment of chemotherapy-induced nausea and vomiting. Current opinion in supportive and palliative care. 2018 Jun 1;12(2):174-80.

13. Ohnishi S, Watari H, Kanno M, Ohba Y, Takeuchi S, Miyaji T, Oyamada S, Nomura E, Kato H, Sugiyama T, Asaka M. Additive effect of rikkunshito, an herbal medicine, on chemotherapy-induced nausea, vomiting, and anorexia in uterine cervical or corpus cancer patients treated with cisplatin and paclitaxel: results of a randomized phase II study (JORTC KMP-02). Journal of gynecologic oncology. 2017 Mar 17;28(5).

14. Morishige KI. Traditional herbal medicine, Rikkunshito, for chemotherapy-induced nausea and vomiting. Journal of gynecologic oncology. 2017 Mar 17;28(5).

15. Sheikhi, M.A., Ebadi, A., Talaeizadeh, A. and Rahmani, H., 2015. Alternative methods to treat nausea and vomiting from cancer chemotherapy. Chemotherapy Research and Practice, 2015.

16. Ohnishi S, Takeda H. Herbal medicines for the treatment of cancer chemotherapy-induced side effects. Frontiers in pharmacology. 2015 Feb 10;6:14.

17. Nazari M, Taghizadeh A, Bazzaz MM, Rakhshandeh H, Shokri S. Effect of Persian Medicine Remedy on Chemotherapy Induced Nausea and Vomiting in Breast Cancer: A Double Blind, Randomized, Crossover Clinical Trial. Electronic physician. 2017 Jan;9(1):3535.

18. Bossi P, Cortinovis D, Cossu Rocca M, Roila F, Seminara P, Fabi A, Canova S, Verri E, Fatigoni S, Iannace A, Macchi F. Searching for evidence to support the use of ginger in the prevention of chemotherapy-induced nausea and vomiting. The Journal of Alternative and Complementary Medicine. 2016 Jun 1;22(6):486-8.

19. Nie J, Zhao C, Deng LI, Chen J, Yu B, Wu X, Pang P, Chen X. Efficacy of traditional Chinese medicine in treating cancer. Biomedical reports. 2016 Jan 1;4(1):3-14.

20. Ebrahimi S M, Parsa-Yekta Z, Nikbakht-Nasrabadi A, Hosseini S M, Sedighi S, Salehi-Surmaghi M. Ginger effects on control of chemotherapy induced nausea and vomiting. Tehran Univ Med J. 2013; 71(6):395-403.

21. Sontakke S, Thawani V, Naik MS. Ginger as an antiemetic in nausea and vomiting induced by chemotherapy: A randomized, cross-over, double-blind study. Indian J Pharmacol 2003;35(1):32-6.

22. Ryan JL, Hickok JT, Roscoe JA, Morrow GR. Ginger for chemotherapy-related nausea in cancer patients: A URCC CCOP randomized, double-blind, placebo-controlled clinical trial of 644 cancer patients. J Clin Oncol 2009;27(15s):9511.

23. Lete I, Allué J. The effectiveness of ginger in the prevention of nausea and vomiting during pregnancy and chemotherapy. Integrative medicine insights. 2016 Jan;11:IMI-S36273.

24. Manusirivithaya S, Sripramote M, Tangjitgamol S, Sheanakul C, Leelahakorn S, Thavaramara T, et al. Antiemetic effect of ginger in gynecologic oncology patients receiving cisplatin. Int J Gynecol Cancer 2004;14(6):1063-9.

25. Zick SM, Ruffin MT, Lee J, Normolle DP, Siden R, Alrawi S, et al. Phase II trial of encapsulated ginger as a treatment for chemotherapy-induced nausea and vomiting. Support Care Cancer, 2009;17(7):563-72.

26. Leopold H, Eberhart J, Mayer R, Beytz O, Tsolakidis S, Hilpert W, et al. Ginger dose not prevent postoperative nausea and vomiting after laparoscopic surgery. Anes Analg. 2003 Apr; 96(4):995-998.

27. montazeri A, ghanbari A, niknami M, atrkarruoshan Z, sobhani A, hasavari F, et al. The Effect of Ginger on the Severity of Nausea and Vomiting induced by Chemotherapy in Cancer' Patient Referred to Razi Hospital in Rasht 2007-2008. J Holist Nurs Midwifery. 2008; 18(2):38-43

28. Ghanbari A, Montazeri, Niknami M, Atr kar Roushan Z, Sobhani A, Najafi B. Effect of Adding Ginger to Common Therapy on the Severity of Nausea and Vomiting Caused by Chemotherapy in Cancer Patients

Referring to Razi Hospital, Rasht, Iran. Journal of Ardabil University of Medical Sciences & Health Services.2010;10(4):352-361.

29. Keihani H, Salehifar E Keihanian Sh, Ala Sh, Avanm R. Journal of Mazandaran University of Medical Sciences (JMUMS). 2016, Vol. 25 Issue 133, p227-235. 9p.

30. Sanati F, Najafi S, Kashani Nia Z, Naseri M, Hosseinzadeh S. Study of Ginger in controlling acute nausea and vomiting due to chemotherapy. Breast diseases in Iran.2014;7(1):7-14.

31. Najafi S. Ginger effects on control of chemotherapy induced nausea and vomiting. ijbd. 2014; 7(1):7-14

32. Borhan F, Naji A, Molavi Vardanjani M, Sassani L. Study on the effect of Chamomile extract on the severity of chemotherapy-dependent nausea and vomiting. Journal of Hamadan Nursing and Midwifery .2017;25(4):140-146.

33. Sanati F, Najafi S, Kashani Nia Z, Sadeghi M. Effect of Ginger and Chamomile on Nausea and Vomiting Caused by Chemotherapy in Iranian Women with Breast Cancer. Asian Pac J Cancer Prev, 2016;17(8):4125-9. PMid:27644672

34. Haddadi M, Ganjloo J, Hashemifard H R, Tabarraie Y. The Effect of Sucking Bits of Ice containing mint (mentha) Extract on Nausea and Vomiting Resulted of Chemotherapy in Patients Suffering from Malignant Cancer. ijbd. 2017; 9 (4):7-14

35. Khalili Z, Khatiban M, Faradmal J, Abbasi M, Zaraati F, Khazayi A. Study of the Effect of Pancreas on Nausea and Vomiting Caused by Chemotherapy in Cancer Patients. Nursing and Midwifery Journal, Hamadan (Nasim Danesh).2014;22(3):64-73.

36. Potter P, Eisenberg S, Cain KC, Berry DL. Orange interventions for symptoms associated with dimethyl sulfoxide during stem cell reinfusions: a feasibility study. Cancer nursing. 2011;34(5):361-368.

37. Fakhar M, Montazeri M, Darabinia M, Bani Mostafavi E, Rafiei A. A review of the Therapeutic Properties of Garlic and Onion in the Traditions of Traditional Medicine and Traditions of Religion and Health.2017;5(1):70-81.

www.revhipertension.com

www.revdiabetes.com

www.revsindrome.com

www.revistaavft.com

Indices y Bases de Datos:

Incluida en las bases de datos de publicaciones científicas en salud:

OPEN JOURNAL SYSTEMS

REDALYC (Red de Revistas Científicas de América Latina, el Caribe, España y Portugal)

SCOPUS de Excerpta Medica

GOOGLE SCHOLAR

Scielo

BIREME (Centro Latinoamericano y del Caribe de Información en Ciencias de la Salud)

LATINDEX (Sistema Regional de Información en Línea para Revistas Científicas de América Latina, el Caribe, España y Portugal)

Índice de Revistas Latinoamericanas en Ciencias (Universidad Nacional Autónoma de México)

LIVECS (Literatura Venezolana de Ciencias de la Salud)

LILACS (Literatura Latinoamericana y del Caribe en Ciencias de la Salud)

PERIÓDICA (Índices de Revistas Latinoamericanas en Ciencias)

REVENCYT (Índice y Biblioteca Electrónica de Revistas Venezolanas de Ciencias y Tecnología)

SABER - UCV

EBSCO Publishing

PROQUEST