TURKISH REPUBLIC OF NORTHERN CYPRUS
NEAR EAST UNIVERSITY
HEALTH SCIENCES INSTITUTE

HERBAL MEDICINE USE IN PREGNANCY

By: Pharm. EDA TÜLEK
MASTER THESIS

NEAR EAST UNIVERSITY FACULTY OF PHARMACY

ADVISOR: PROF. DR. FİLİZ MERİÇLİ

2019-NICOSIA

STATEMENT (DECLARATION)

Hereby I declare that this thesis study is my own study, I had no unethical behavior in all stages from planning of the thesis until writing thereof, I obtained all the information in this thesis in academic and ethical rules, I provided reference to all of the information and comments which could not be obtained by this thesis study and took these references into the reference list and had no behavior of breeching patent rights and copyright infringement during the study and writing of this thesis.

EDA TÜLEK

ACKNOWLEDGEMENTS

Foremost, I would like to gratefully and sincerely thank Prof. Dr. Filiz Meriçli for her guidance, support, understaning and patience.

Also, I would like to thank the members of the Cyprus Turkish Pharmasists' Association who participated in the conducted survey with a warm welcome.

CONTENTS

ABBREVIATIONS AND SYMBOLS

ACE inhibitor: Angiotensin Converting Enzyme Inhibitor

CAM: Complementary and Alternative Medicine

CHM: Chinese Herbal Medicine

CNS: Central Nervous System

CYP: Cytochrome P 450

EMA: European Medicines Agency

FDA: Food and Drug Administrarion

HMP: Herbal Medicinal Product

HTP: Hypertension of Pregnancy

KHB: Korean Herbal Medicine

KTEB: Kıbrıs Türk Eczacılar Birliği- Turkish Cypriot Pharmacists' Association

MAS: Meconium Aspiration Syndrome

MSAF: Meconium Stained Amniotic Fluid

NSAID: Non-steroidal Anti-inflammatory Drug

PPHN: Persistent Pulmonary Hypertension of Newborn

PROM: Premature Rapture of Membranes

TRNC: Turkish Republic of Northern Cyprus

UK: United Kingdom

USA: United States of America

WHO: World Health Organization

Ecz.Eda TÜLEK

Prof. Dr. Filiz MERİÇLİ

NEAR EAST UNIVERSITY FACULTY OF PHARMACY

ÖZET

Amaç:

Bu çalışmanın amacı, dünyada hamilelikte kullanılan bitkisel ilaç ve ürünlerin belirlenerek, bu ürünlerin etkinlik ve güvenilirliklerinin araştırılmasıdır.Bununla birlikte, bir anket çalışmasıyla Kuzey Kıbrıs Türk Cumhuriyeti eczanelerinde, hamilelere eczacılar tarafından önerilen bitkisel ürünlerin belirlenmesi, dünyada kullanılan bitkisel materyalin Kuzey Kıbrıs Türk Cumhuriyeti'ndeki mevcudiyetlerinin kıyaslanmasıdır.

Materyal ve Metodlar:

Pubmed, Google Scholar, ScienceDirect, Open Access gibi veri tabanlarında anahtar sözcükler (Tamamlayıcı Tedaviler, Hamilelik, Tıbbi Bitkiler,Etkinlik ve güvenilirlik, Aromaterapi) kullanılarak ilgili makaleler derlendi. Ayrıca Kıbrıs Türk Eczacılar Birliği (KTEB)' nden izin alınarak ekte gösterilen anket çalışmasıyla da Kuzey Kıbrıs eczanelerinde hamilelikte önerilen bitkisel ürünler derlendi.

Bulgular:

Veritabanlarından derlenen ve hamilelik ve doğum sonrasında kullanılan bitkiler kullanıldıkları endikasyonlara göre tablolanmıştır.Bu bitkilerle ilgili etkinlik ve güvenlik konularıyla ilgili literatür derlenmiştir.Kuzey Kıbrıs Türk Cumhuriyeti'nde eczacıların hamilelere önerdikleri ürünler yapılan anket çalışmasıyla belirlenmiştir.

Sonuçlar:

Kadınlar tüm dünyada bitkisel ürün tüketicilerinin başında gelmektedir. Hamile kaldıkları zaman da, ya hamile oldukarını fark etmediklerinden, ya da bebeğe bitkisel ürünlerin diğer ilaçlardan daha az zarar vereceği ya da vermeyeceği sanısıyla bitkisel ürünleri, çoğunlukla sağlık profesyonellerine bilgi vermeksizin, kullanmaya devam etmektedirler. Kuzey Kıbrıs'ta ise durum bundan farklıdır. Hamileler bitkisel ilaç kullanmamakta, kullanıyorlarsa da mutlaka sağlık profesyoneli tarafından önerilen ürünleri kullanmaktadırlar.

Pharm. Eda TÜLEK

Prof. Dr. Filiz MERİÇLİ

NEAR EAST UNIVERSITY PHACULTY of PHARMACY

ABSTRACT

Aim:

The aim of this study is to determine the herbal medicines of herbal products used in pregnancy and search their safety and efficacy. In addition, to determine the herbal products and medicines recommended to pregnant women by the community pharmacists in the Turkish Republic of Northern Cyprus by conducting a questionnaire and to compare the herbal medicines and products used in the World and their availability in the Turkish Republic of Northern Cyprus.

Material and Method:

Data bases like Pubmed, Google Scholar, ScienceDirect, Open Acces were searched using key words and related literature were gathered and reviewed. In addition, a questionnaire was conducted and the herbal medicines and herbal products recommended by community pharmacists in the Turkish Republic of Northern Cyprus were compiled.

Findings:

The herbal medicines and products which were compiled from the articles by searching the databases are tabulated according to their indications in pregnancy. Safety and efficacy literature in relation to these are reviewed. The herbal medicines and products used by pregnant women recommended by communty pharmacists in the Turkish Republic of Northern Cyprus is documented by conducting a questionnaire.

Results:

Women are the main consumers of herbal medicine and herbal product. When they get pregnant, they have a tendency to continue use of such products either because they are unaware of the fact that they are pregnant or they prefer to use such products with the perception that ‘herbal medicines are safer than conventional medicines’ and ‘herbal medicine would do no harm to the foetus’. They do so mostly without informing theit health care

professionals. In the Turkish Republic of Northern Cyprus, this situation does not apply. The pregnant women do not consume any herbal medicine or product unless recommended by their health care professional.

Key words:

Complementary and alternative medicine, herbal medicine, pregnancy, safety and efficacy, aromatherapy

LIST of TABLES

LIST OF FIGURES

1.INTRODUCTION

For the last three or four decades, the tendency to use herbal products has been increasing; considerably in the past two decades (Kennedy et *al*., 2013). This is as a result of people's need to be more involved in their health holistically and the perception of ' natural products being safe', while trying to avoid the side-effects of conventional medicines. Due to the fact that women are larger number of of consumers than men (Trabace et *al*., 2015; Hall et *al*.,2011), they are likely to continue to use these herbal products when they get pregnant. Firstly, because they do not recognize that they are pregnant in the first trimester and secondly, they try to protect the foetus from the possible harms of pharmaceutical medicines by using herbal products.

By reviewing the herbal medicines and herbal products used by pregnant women, such products are documented in tables acccording to their indications in pregnancy and literature regarding their safety and efficacy are compiled together. The author, in doing so, hopes to form a foundation for future research on the safety and efficacy of herbal medicines and products used in pregnancy as this information is much needed not only by the consumers but health professionals as well. The safety and efficacy of many complementary and alternative medicines including herbal medicines are not known totally; their mutagenicity or terarogenicity are often guessed on the basis of in vitro and animal data (Tsui et *al*., 2001) and women need to be aware that the active ingredients may harm the foetus due to their potential pharmacologic activity.

The aim of this study is to review the herbal medicines used in pregnancy world-wide.Then, the author collected data on the herbal medicines recommended by community pharmacies in the Turkish Republic of Northern Cyprus by conducting a questionnaire (Table 19) with the permission granted by the Turkish Pharmacists' Association. The author also compared the availability of the herbal product in Cyprus to the herbal product used in the World (Table 18).

1.1.Pregnancy and Drug Prescribing

During pregnancy women are treated for three groups of conditions; pre-existing medical conditions, co-incidental illnesses and pregnancy-related conditions (Freyer, 2008). The overall aim is for the women to take the lowest effective dose of the least toxic drug for the shortest period to keep her condition under control and achieve the best possible pregnancy outcome (Freyer, 2008). Pregnant women, through counsulting with their healthcare professional, should be able to balance the risk of taking a drug against the risk of not taking a drug and leaving the medical condition untreated (Freyer, 2008). Table 1. Shows thedrugs known or suspected to cause developmental defects and their safer alternatives(Freyer, 2008).

Table 1. Drugs known or suspected to cause developmental defects and safer alternatives (Freyer, 2008)

Drug class	**Drugs to be avoided in pregnancy**	**Drugs considered safer alternatives**
Analgesics	NSAIDs	Paracetamol Opiates(for moderate-severe pain)
Antibiotics	Trimethoprim(1st trimester) Aminoglycosides	Penicillins Cephalosporins Erythromycin
Anticonvulsants	Sodium valproate Phenytoin	 Lamotrigine Carbamezapine
Cardiovascular drugs	ACE inhibitors Amiodarone	Methyldopa Digoxin
Hypoglycaemics	Sulfonylureas	Insulin
Other	Cytotoxics Retinoids Statins Thalidomide	

Since the thalidomide tragedy in the 1960's there has been increased public awareness of the risks that some medicines, when taken during pregnancy, may harm

the developing baby meaning having a teratogenic effect. (http://www.medicinesinpregnancy.org, Accession date 10 June 2018). Most medicines used by the mother will cross the placenta and reach the baby. How a medicine affects a baby may depend on the stage of the pregnancy when the medicine is taken (http://www.medicinesinpregnancy.org, Accession date 10 June 2018).

1.2.Herbal Medicines in Pregnancy

1.2.1.Definitions

The National Centre for Alternative and Complementary Medicine defines Complementary and alternative medicine (CAM) as ' Group of health care approaches developed outside of conventional medicine for specific conditions or overall wellbeing' (Mitchell, 2016).

According to the European regulations; herbal medicinal product (HMP) is defined as ' any medicinal product, exclusively containing as active ingredients one or more herbal substances or one or more herbal preparations, or one or more such substances in combination with one or more such herbal preparations' (Weisner and Knöss, 2017).

World Health Organization defines herbal medicinal product as; ' any medicinal product based on herbs, herbal materials, herbal preparations and finished herbal products, that contain as active ingredients parts of plants, other plant materials, or combinations thereof (Kennedy et *al.*, 2016).

1.2.2. Regulations regarding herbal medicines or herbal product

In the United States, herbs are considered dietary supplements and the Food and Drug Administration(FDA) allows them to remain in the market unless they are proven unsafe (Tesch, 2003). Unlike the United States, The Comittee of Herbal Medicinal Products is responsible for preparing view of the European Medicines Agency (EMA) on herbal medicines (Weisner and Knöss, 2017). Before EMA, German Commission E used to review scientific studies and issued monographs. The EMA, generally,evaluates the monographs clincally according to the combination of

documented experience gained during long-standing use with bibliographic data (e.g. published clinical trials concerning efficacy) of such products(Weisner and Knöss, 2017).

1.2.3.Herbal medicines in pregnancy and their safety and efficacy issues

In pregnancy, the overall aim of drug prescribing is for the expectant women to take the lowest effective dose of the least toxic drug for the shortest period to keep her condition under control and achieve the best possible pregnancy outcome (Freyer, 2008).

The use of over-the-counter medication and herbal remedies during pregnancy is increasing due to the misconception that the natural products are 'safer' than the conventional drugs hence the foetus could be protected from concentional medicine's adverse and side effects (Freyer, 2008). However, one should always rememeber that, although herbal medicines are believed to be safer than conventional drugs, herbal medicines historically have been used for their potent pharmalogical actions, therefore they are not 'safer' than their conventional counterparts (Kennedy et *al*., 2016).

Limited evidence on herbal drug safety; their teratogenicity and mutagenicity is based on animal studies,invitro data, case reports or epidemiological studies (Freyer, 2008; Tsui et *al*., 2001) so mainly their effects on a developing foetus are largely unknown.

1.2.4. Prevalence of use of herbal products

In the European Union, the prevalence of herbal medicine use ranges from 5,9% to 48,3%, whereas in the USA and Canada is estimated to be 17,9% and 12% respectively (Kennedy et *al*., 2013). In the studies overviewed for this article, the use of herbal products in; the UK was 56% (Nordeng et *al.*, 2011), 25.2% (Kennedy et *al*., 2013) and 57,8% (Holst et *al*., 2013); Italy 48% (Nordeng et *al*., 2011), 27,2% (Kennedy et *al*., 2013) and 81% (Trabace et *al*., 2015); Norway 46% (Nordeng et *al*., 2011); US 5,4% (Chung et *al*., 2017) and 29% (Kennedy et *al*., 2013); Australia 62% (Nordeng et *al.*, 2011), 43,8% (Kennedy et *al*., 2016) and

75,3% (Bowe et *al*., 2015); Alexandria 27,3% (Orief et *al*., 2014); Japan 76% and Taiwan 33,6% (Chuang et *al*., 2009); Russia 92% (Zagorodnikova et *al*., 2016); Turkey 43% (Koç et *al*., 2016); Canada 23.7% (Kennedy et *al*., 2013).

According to WHO, up to 80% of the population of Africa depends on traditional medicine for primary health care and in China, herbal medicines account for 30-50% of the total medicine consumption.(WHO, 2004). In Europe, North America and other industrialized regions over 50% of the population have used complementary and alternative medicine (CAM) at least once and CAM is common among pregnant women, in particular (WHO, 2004).

Surveys estimate that between 65% and 100% of midwives endorse the use of CAM by childbearing women. Between 78% and 96% of participant midwives refer clients to CAM practitioners (Hall et *al*., 2012). In Turkey, 58.9% of the midwives suggested CAM methods to pregnant women (Koç et *al*., 2012). In a recently published study (Kennedy et *al*., 2016); it was found that women who reported taking a contraindicated herb in pregnancy were more likely to have been recommended by a health care professional rather than informal sources; therefore there is an urgent need for more education among the health care professionals. This finding supports the findings of Hall et al., 2012 and Tiran, 2006.
The use of herbal medicine is determined by patients' dissatisfaction of conventional drugs in terms of safety and efficacy and the perception that herbal medicines are 'safe'.(Trabace et *al*., 2015; Nordeng et *al*., 2011; Bowman et *al*., 2014; Tiran. 2006; Hall et *al*., 2012; Tiran, 2006; Ernst and Watson, 2012; Hall et *al*., 2011).

One must not forget that; despite the common perception of safety, herbal medicines have been historically used for their potent pharmalogical actions therefore their safety and efficacy should be established through more evidence-based use in practice rather than common perceptions (Kennedy et *al*., 2016).

2.MATERIAL AND METHOD

The Near East Grand Library electronic resources were searched between the years 1993 and 2018 and related literature were collected from the ScienceDirect, Pubmed, EBSCO and Google Scholar and WHO pages on the internet.

In addition,with the permission granted by the Cyprus Turkish Pharmacists' Association, a questionnaire was conducted in the months of November and December 2018 among the community pharmacies registered to the Cyprus Turkish Pharmacists' Association and data were collected.

3.FINDINGS

3.1. Health Problems Treated by Herbal Medicines During Pregnancy

In this review, the herbal medicines used to treat health problems in pregnancy are grouped according to their indications.The symptoms treated by herbal remedies during pregnancy are shown in Table 2. Herbal remedies having cytotoxic, oxytocic, abortifacient, contraceptive properties which are contraindicated in pregnancy are also shown in Table 2.

Table 2. Symptoms treated by herbal remedies during pregnancy

Number	Symptom	Notes
1.	To support and nourish pregnancy	See Table 3
2.	To prevent miscarriage and for postpartum haemorrhage	See Table 4
3.	Nausea and vomiting	See Table 5
4.	Heatburn, digestive problems, abdominal pain	See Table 6
5.	Anaemia	See Table 7
6.	Infections (of the urogenital tract)	See Table 8
7.	Mood changes, fatigue, stress, anxiety, sleeping disorders, for relaxing, depression	See Table 9
8.	Varicose veins, constipation, piles	See Table 10
9.	For painful pre-labour and pain relief	See Table 11
10.	Respiratory tract infections; common cold, sore throat, cough and allergies	See Table 12
11.	For the induction of labour and to facilitate delivery	See Table 13
12.	Cytotoxic, oxytocic, abortifacient, contraceptive plants contraindicated in pregnancy	See Table 14
13.	Other uses	See Table 15

3.2. Herbal Medicines Used in Pregnancy According to Their Indications

Herbal products are used in pregnancy to support and nourish pregnancy; to prevent miscarriage and for postpartum haemorrage; for nausea and vomiting; for heatburn, digestive problems and abdominal pain; for anaemia; for infections (of the urogenital tract); for mood changes, fatigue, stress, anxiety, sleeping disorders, relaxing, depression; for varicose veins, constipation and piles. Some are used for pain-relief in labour. Respiratory tract infections such as common cold, cough, sore throat and allergies are also treated with herbal products. Also, there are herbal

products which are used to treat head lice, stretch marks, skin problems, gestational diabetes, dental pain, hypertension, malaria, oedema and weight loss. Table 2. shows the symptoms treated by herbal remedies during pregnancy. Herbal agents having cytotoxic, oxytocic, abortifacient, contraceptive properties which are contra-indicated in pregnancy are also shown in Table 2.The herbal products used to treat the above mentioned symptoms in pregnancy are summarized in tables below. In these tables while they were being organized, the method of use of the herbs are given as ‘ Not stated’ according to the relevant literature.

3.2.1.Plants used to support and nourish pregnancy

As the lists of plants used to support and nourish pregnancy are very long, the author found it more convenient to tabulate the plants used to support and nourish pregnancy separately according to geographical region; hence Table 3a. shows the plants used to support and nourish pregnancy mainly in Europe and North America, Asia; Table 3b. shows African plants used to support and nourish pregnancy; Table 3c. shows Chinese Herbal Medicine (CHM) used to support and nourish pregnancy and Table 3d. shows Korean Herbal Medicine used to support and nourish pregnancy. In the case of Korean Herbal Medicine; they are classified as ‘ herbal medicines used to support and nourish pregnancy’ because in the original article the indications were not specified.

Table 3a. Plants used to support and nourish pregnancy in Europe,Asia and North America

English Name	Scientific Name	Method of Use	References
Alfaalfa	*Medicago sativa*		Stapleton, 1995
Watercress	*Nasturtium officinale*		Stapleton, 1995
Chickweed	*Stellaria media*		Stapleton, 1995
Burdock	*Arctium lappa*		Stapleton, 1995
Orange blossom			Stapleton, 1995
Kelp			Stapleton, 1995
Nettles	*Urtica dioica*		Stapleton, 1995; Pinn and Pallet,2002; Tsui et *al*.,2001
Chamomile	*Matricaria chamomilla*		Gibson et al., 2003; Stapleton,1995;

			Weisner and Knöss, 2017)
Cleavers	*Galium aparine*		Stapleton, 1995
Oats	*Avena sativa*		Stapleton, 1995
Rosehip	*Rosa canina*	tea	Stapleton, 1995; Bishop et *al.*,2011
Lemon balm	*Melissa officinalis*		Stapleton, 1995
Dandelion	*Taraxacum officinale*		Stapleton, 1995
Garlic	*Allium sativum*		Stapleton,1995;Bishop et *al.*,2011; Gibson et *al*.,2003; Yusof et *al*.,2016
Scullcap	*Scutellaria sp.*		Stapleton, 1995
Pregnancy tea	*Rubus ideus* leaf, *Urtica dioica, Melissa officinalis*	tea	Stapleton, 1995.
Raspberry leaf	*Rubus ideus*	tea	Stapleton 1995; Bishop et *al.*,2011;Pinn and Pallet, 2002; Ernst,2002.
Aloe	*Aloe vera*	topical	Gibson et *al*., 2003.
Pumkin seeds	*Cucurbito pepo*	seeds	Gibson et *al*., 2003;Weisner and Knöss, 2017
Almond oil	*Prunus dulcis*	oil,topical	Damase-Michel et *al*.,2004
Blackcurrant	*Ribes nigrum*	oral,tacolysis	Damase-Michel et *al*.,2004; Tsui et *al*.,2001
Jasmine green tea	*Camelia sinensis*	tea	Bishop et *al*.,2011
Lemon verbena	*Aloysia citriodora*	tea	Bishop et *al*.,2011
Arnica	*Arnica montana*	tablet,cream homeopathic	Bishop et *al*.,2011
Calendula	*Calendula officinalis*	tablet,cream homeopathic	Bishop et *al*.,2011
Bach flower remedies	38 plants	tablet,cream homeopathic	Bishop et *al*.,2011
Aconite	*Aconitum napellus*	homeopathic	Bishop et *al*.,2011
Mastic tree	*Pistacia lentiscus*	decoction of leaves,gum	Ali-Shtayeh et *al*.,2015
Carrot	*Daucus carota*	food	Ali-Shtayeh et *al*.,2015
Avacado	*Persea americana*	fruit, food	Ali-Shtayeh et *al*.,2015
Onions	*Allium cepa*	food	Ali-Shtayeh et *al*.,2015
Banana	*Musa paradisiaca*	food	Ali-Shtayeh et *al*.,2015
Green tea	*Camelia sinensis*	tea	Glover et *al*.,2003; Mousally and Berard, 2010; Orief et *al*., 2014
Sea cucumber	*Holothuroidea* sp.		Yusof et *al*.,2016
Spirulina	*Spirulina platensis*	food	Yusof et *al*.,2016

Power Root Tongat Ali cafe	*Eurycoma longifolia*	Related to HTP and fetal distress	Yusof et *al.*,2016
Fish oil			Chung et *al*.,2017
Probiotics and prebiotics			Chung et *al*.,2017; Tsui et *al*.,2001
Acai	*Euterpe oleracea*		Chung et *al*.,,2017
Reishi mushroom	*Ganoderma lucidum*	tea	Tsui et *al*.,2001
Pregnancy tea	Spearmint, raspberry, nettle, rosehip, fennel, lemongrass, alfalfa, lemon verbena	Leaves, tea	Tsui et *al.*, 2001
Blueberry	*Vaccinium* sp.		Kıssal et *al*.,2013
Evening primrose	*Oenothera biennis*	oil	Broussard et *al*.,2010; Pinn and Pallett,2002; Ernst,2002.
Herbal tea	unidentified		Broussard et *al*.,2010

Table 3b. African plants or formulae used to support and nourish pregnancy

Name	Scientific Name	Notes	Method of Use	References
Isihlambezo	*Agophantus africanus, Asclepias fruticosa, Callilepis laureola, Clivia minita, Combretum erythrophyllum*	Formula; ingredients can change from area to area	Not stated	Varga and Veale, 1997
Isihlambezo	*Crinium* sp., *Gunnera perpensa, Pentasia prunelloides, Rhoicissus tridentata*	Formula; ingredients can change from area to area	Not stated	Varga and Veale, 1997
	Scadoxus puniceus		Not stated	Varga and Veale, 1997
	Typha capensis		Not stated	Varga and Veale, 1997
	Vernonia neocorymbosa		Not stated	Varga and Veale, 1997
	Ficus exasparata	leaf	Therapeutic meal, enema	Malan and Neuba, 2011
	Hoslundia opposita	Leaf	Therapeutic meal	Malan and Neuba, 2011
	Trema guineensis	leaf	Therapeutic	Malan and

			meal, enema	Neuba, 2011
	Ageratum conyzoides	leaf	deocotion	Towns and Andel, 2015
	Ricinodendron heudelotti	Bark,seed	food	Malan and Neuba, 2011
	Elaeis guineensis	seeds	food	Malan and Neuba, 2011
	Xylopia aethiopica	fruits	Decoction, food	Malan and Neuba, 2011
	Newbouldia laevis	Leaves,bark	decoction	Malan and Neuba, 2011
	Spathdea campanulata	bark	decoction	Malan and Neuba, 2011
	Nephrolepis biserrata	Leaves, bark	food	Malan and Neuba, 2011
	Dracaena biserrata	leaves	food	Malan and Neuba, 2011
	Khaya senegalensis	leaves	food	Malan and Neuba, 2011
	Manihot esculenta	leaves	food	Malan and Neuba, 2011
	Securidaca longipedinculata	leaves	decoction	Malan and Neuba, 2011
	Dichapetalum madagascariense	Leaves	decoction	Malan and Neuba, 2011
	Schwenckia americana	Whole plant	decoction	Malan and Neuba, 2011
	Desmodium gangeticum	Leaves, whole plant	decoction	Malan and Neuba, 2011
	Pavetta corymbosa	leaves	decoction	Malan and Neuba, 2011
	Diodella sarmentosa	Leaves, whole plant	decoction	Malan and Neuba, 2011
	Heterotis rotundifolia	Leaves	decoction	Malan and Neuba, 2011

Table 3c.Chinese Herbal Medicine used to support and nourish pregnancy*

Name	Type	Method of use	Ingredients	References
An-Tai-Yin	Formula	Not stated	Fritillariae bulbus, Zingiber rhizoma, Angelicae radix, Glycyrrhizae radix, Ligustici rhizoma, Paeoniae lactiflorae radix, Astragali radix, Notopterigii rhizoma, Magnoliae cortex, Schizanepetae herba, Citri	Chuang et *al.*, 2009

			immaturus fructus, Artemisiae argyi folium and Cuscutae semen	
Pearl Powder	Single	Not stated	Margarita	Chuang et *al*., 2009
Huang Lian	Single	Not stated	Coptidis rhizoma	Chuang et *al*., 2009
Szu-Wu-Tang	Formula	Not stated	Rehmannaiae radix, Paeoniae radix, Angelicae sinensis radix,Chuanxiong rhizoma	Chuang et *al*., 2009
			In decreasing precalance	
Dong Quai	Single	Not stated	*Angelica sinensis*	Tang et *al*., 2016
Hong zao	Single	Not stated	*Ziziphus jojoba*	Tang et *al*., 2016
Shan yao	Single	Not stated	*Dioscorea opposita*	Tang et *al*., 2016
	Single	Not stated	*Lycium barbarum*	Tang et *al*., 2016
	Single	Not stated	*Codonopsis pilosula*	Tang et *al*., 2016
	Single	Not stated	*Gastrodia elata*	Tang et *al*., 2016
	Single	Seeds	*Gingko biloba*	Tang et *al*., 2016
	Single	Not stated	*Panax ginseng*	Tang et *al*., 2016
	Single	Not stated	*Astragalus membranaceus*	Tang et *al*., 2016
	Single	Not stated	*Adenophora tetraphylla*	Tang et *al*., 2016
	Single	Seeds	*Coix lacryma-jobi*	Tang et *al*., 2016
	Single	Not stated	*Panax notoginseng*	Tang et *al*., 2016
	Single	Not stated	*Poligonum multiforum*	Tang et *al*., 2016
	Single	Not stated	*Equus asinus*	Tang et *al*., 2016

*The Chinese Herbal Medicine is classified here as ‘ herbal medications used to support and nourish pregnancy’ because in the original article the indications were not specified.

Table 3d. Korean Herbal Medicine used to support and nourish pregnancy*

Name	Type	Ingredients	References
Gungso-san	Formula	Liriopis tuber, Peucedani radix, Scutellariae radix, Atractylodis rhizoma white, Citrii pericarpium, Cnidii rhizoma, Paeoniae radix alba, Perilla herba, Pueraiae radix, Glycyrrhizae radix.	Jo et *al*.,2016
Gyoaesamul-tang	Formula	Amomi fructus, Angelica gigantis radix, Artemisiae argi folium, Asini gelatinum, Atractylodis rhizoma white, Cnidii rhizoma, Cyperi rhizoma, Paeoniae radix alba, Rehmanniae radix preparata, Scutellariae radix.	Jo et *al*.,2016
Dalsaeng-sang	Formula	Arecae pericarpium, Glycyrrhizae radix, Angelica gigantis radix, Atractylodis rhizoma white, Paeoniae radix alba, Amomi fructus, Aurantii fructus, Cirti pericarpium, Ginseng radix, Perilla herba.	Jo et *al*.,2016
Antaegeumchul-tang	Formula	Terba flava usta, Atractylodis rhizoma white, Pinelliae rhizoma, Zingiberis rhizoma crudus, Citri pericarpium, Cyperi rhizoma, Poria, Scutellariae radix, Amomi fructus, Amomi rotundus fructus, Perilla herba, Aucklandiae radix, Aurantii fructus, Citri reticulatae viride pericarpium, Glycyrrhizae radix.	Jo et *al*.,2016
Odam-tang	Formula	Aurtanti immaturus fructus, Citri pericarpium, Pinelliae rhizoma, Poria, Glycyrrhizaae radix, Zingiberis rhizoma crudus, Jujubae fructus, Bambuscae caulus in taeniam.	Jo et *al*.,2016

Samul-tang	Formula	Angelica gigantis radix, Cnidii rhizoma, Paeoniae radix alba, Rehmanniae radix preparata.	Jo et *al*.,2016
Palmul-tang	Formula	Angelica gigantis radix, Atractylodis rhizoma white, Cnidii rhizoma, Ginseng radix, Glycyrrhizae radix, Paeoniae radix alba, Poria, Rehmanniae radix preparata.	Jo et *al*.,2016
	Single	Atractylodis rhizoma white	Jo et *al*.,2016
	Single	Glycyrrhizae radix	Jo et *al*.,2016
	Single	Ginseng radix	Jo et *al*.,2016
	Single	Rehmanniae radix preparata	Jo et *al*.,2016
	Single	Citri pericarpium	Jo et *al*.,2016
	Single	Amomi fructus	Jo et *al*.,2016
	Single	Eucommiae cortex	Jo et *al*.,2016
	Single	Scutellariae radix	Jo et *al*.,2016
	Single	Dioscoreae rhizoma	Jo et *al*.,2016
	Single	Lycii fructus	Jo et *al*.,2016
	Single	Paeoniae radix alba	Jo et *al*.,2016
	Single	Angelica gigantis radix	Jo et *al*.,2016
	Single	Cyperii rhizoma	Jo et *al*.,2016
	Single	Perillae herba	Jo et *al*.,2016
	Single	Corni fructus	Jo et *al*.,2016
	Single	Cnidii rhizoma	Jo et *al*.,2016
	Single	Poria (*Wolfiporia extensa*)	Jo et *al*.,2016
	Single	Dolichoris semen	Jo et *al*.,2016
	Single	Zingiberis rhizoma crudus	Jo et *al*.,2016

*The Korean Herbal Medicine is classified here as ‘ herbal medicines used to support and nourish pregnancy’ because in the original article the indications of pregnancy were not specified. Also, the method of use of these medicines were not mentioned.

As can be observed from the lists; Korean and Chinese Herbal Mediciations have many plants in common.

3.2.2.Plants used to prevent miscarriage and used for postpartum recovery

Plants used to prevent miscarriage and used for postpartum recovery are listed in Table 4.

Figure 4. Plants used to prevent miscarriage and used for postpartum recovery

Name	Scientific Name	Method of Use	References
Caraway	*Carum carvi* seeds	decoction	Ali-Shtayeh et *al*., 2015
Tree of life	*Thuja occidentalis* leaves	decoction, vaginal bath	Ali-Shtayeh et *al*., 2015
Fenugreek	*Trigonella berythea* seeds	decoction, vaginal bath	Ali-Shtayeh et *al*., 2015
Common sage	*Salvia fruticosa* leaves, flowers	decoction, wash	Ali-Shtayeh et *al*., 2015
Roselle	*Hibiscus sabdariffa* leaves	decoction	Ali-Shtayeh et *al*., 2015
Common mallow	*Malva sylvestris* aerial parts	vaginal bath, oral	Ali-Shtayeh et *al*., 2015
Clove	*Syzygium aromaticum* fruit	decoction	Ali-Shtayeh et *al*., 2015
Black cumin	*Nigella sativa* seeds	Not stated	Ali-Shtayeh et *al*., 2015
Mahaleb	*Prunus mahalab/ Cerasus mahalab* seeds	infusion	Ali-Shtayeh et *al*., 2015
	Desmodium ascendens leaf	enema	Malan and Neuba, 2011
	Sparganophorus sparganophora leaf	enema	Malan and Neuba, 2011
	Spondias mombin leaf	enema	Malan and Neuba, 2011
	Solenostemon monostachyus leaf	enema	Malan and Neuba, 2011
Lavender	*Lavendula angustifolia* volatile oil	aromatherapy	Mousley, 2005
Anjeonicheon-tang (Korean Herbal Medicine)	Atractylodis rhizoma white, Ginseng radix, Rehmanniae radix preparata, Corni fructus, Dioscoreae rhizoma, Eucommiae cortex, Dolichoris semen, Lycii fructus, Glycyrrhizae radix	decoction	Jo et *al*., 2016
Antae-eum (Korean	Angelica gigantis radix, Atractylodis	decoction	Jo et *al*., 2016

Herbal Medicine)	rhizoma white, Paeoniae radix, Rehmanniae radix, Citri pericarpium, Cnidii rhizoma, Ginseng radix, Amomi fructus, Glycyrrhizae radix, Perillae herba, Scutellariae radix.		

3.2.3. Plants used for nausea and vomiting of pregnancy

Up to 70% of expectant mothers experience nausea at some point during early pregnancy (americanpregnancy.org, Accession date: 17 January 2019).It is the most experienced symptom of pregnancy.Traditionally, it is believed that foetus with hair causes more nausea and vomiting. Table 5. Shows plants used for nausea and vomiting of pregnancy.

Table 5. Plants used for nausea and vomiting of pregnancy in literature.

Name	Scientific Name	Method of Use	References
Fennel	*Foeniculum vulgare*	tea	Bishop et *al*.,2011; Samavati et *al*, 2017; Stapleton, 1995; Trabace et *al*., 2015.
Meadowsweet	*Filipendula ulmaria*	tea	Pinn and Pallett, 2002; Stapleton, 1995.
Peppermint	*Mentha piperita*	aromatherapy, tea	Pinn and Pallett, 2002; Stapleton, 1995; Gibson et *al*., 2001; Odalovic et *al*., 2016; Bishop et *al*., 2011; Weissner and Knöss, 2017; Glover et *al*., 2003; Koç et *al*.,2016; Holst et *al*.,2011; Orief et *al*., 2014; Mousally and Berard, 2010; Chung et *al*.,2017; Tsui et *al*., 2001; Hall et *al*., 2012; Koç et

			al.,2012; Westfall, 2004; Broussard, 2010; Tiran, 2003.
Spearmint	*Mentha spicata*	aromatherapy, tea	Bishop et *al.*, 2011; Stapleton, 1995; Koç et *al*., 2016.
Aniseed	*Pimpinella anisum* seeds	tea	Bishop et *al.*, 2011; Stapleton, 1995; Orief et *al*., 2014;
Chamomile	*Matricaria chamomile; Matricaria recutita*	aromatherapy, tea	Stapleton, 1995; Koç et *al*., 2016; Orief et *al*., 2014; Ali-Shtayeh et *al*., 2015.
Hops	*Humulus lupulus*	tea	Stapleton, 1995.
Lemon balm	*Melissa officinalis*	tea	Stapleton, 1995; Trabace et *al*., 2015; Koç et *al.*, 2016.
Ginger	*Zingiber officinale* roots	capsules, tea, tablet	Stapleton, 1995; Trabace et *al*., 2015; Koç et *al.*, 2016; Gibson et *al*., 2001; Samavati et *al*., 2017; Odalovic et *al*., 2016; Bishop et *al*., 2011; Weissner and Knöss, 2017; Glover et *al.*, 2003; Tiran,2012; Holst et *al*., 2011; Nordeng et *al.*, 2011; Orief et *al*.,2014,Tsui et *al*., 2001; Zagorodnikova et *al*., 2016; Hall et *al*., 2012; Westfall, 2004; Bowe et *al*., 2015; Bowman et *al*., 2014; Broussard, 2010; Holst et *al*., 2011; Ding et *al*., 2013.
Iceland moss	*Cetraria islandica*	tea	Stapleton, 1995.
Elm	*Ulmus minor* bark	chewable tablets	Stapleton, 1995.
Lemon	*Citrus lemon* oil	aromatherapy, tea	Yavari et *al*., 2014; Kıssal et *al*., 2013; Koç et *al*., 2012.
Lavender	*Lavendula angustifolia* oil	aromatherapy	Yazdkhasti and Pirak, 2016.
Cannabis,Marijuana	*Cannabis sative*	smoking	Westfall, 2004; Samavati et *al*., 2017.

Ipecac	*Carapichea ipecachuana*	homeopathic	Bishop et *al.*,2011
Nux-vomica	*Strychnos nux-vomica*	homeopathic	Bishop et *al.*, 2011
Eucalyptus	*Eucalyptus globulus* oil	aromatherapy	Bishop et *al.*, 2011
Neroli-Orange blossom	*Citrus aurantium* oil	aromatherapy	Bishop et *al.*, 2011
Cinnamon tree	*Cinnamomum verum* bark	oral	Ali-Shtayeh et *al.*, 2015
Garlic	*Allium sativum*	Not stated	Pallivalipila et *al.*, 2014
Nettle	*Urtica dioica* roots	Not stated	Pallivalipila et *al.*, 2014
Ginseng	*Panax ginseng* roots	Not stated	Pallivalipila et *al.*, 2014; Yusof et *al.*, 2016.
Black sesame	*Sesamum indicum* seeds	Not stated	Koç et *al.*, 2016
Clove	*Syzygium aromaticum* flower buds	Not stated	Koç et *al.*, 2016
Dill	*Anethum graveolens*	Not stated	Koç et *al.*, 2016
Parsley	*Petroselinum crispum*	Not stated	Koç et *al.*, 2016
Thyme	*Thymus vulgaris*	Not stated	Koç et *al.*, 2016
	Trichila monadelpha bark	decoction	Towns and Andel,2015
Rosehip	*Rosa canina*	tea	Kıssal et *al.*, 2013
Raspberry	*Rubus ideus*	tea	Westfall, 2004
Bosaeng-tang (formula)	Atractylodis rhizoma white, Citri pericarpium, Cyperi rhizoma, Linderae radix, Ginseng radix, Glycyrrhizae radix	decoction	Jo et *al.*, 2016

Gyullyeongbosaeng-tang (formula)	Citri pericarpium, Amomi fructus, Atractylodis fhizoma, Cyperi rhizoma, Poria, Alpiniae katsumadai semen, Pogostemonis herba, Scutellariae radix, Glycyrrhizae radix, Zingiberis rhizoma crudus, Mume fructus.	decoction	Jo et *al.*, 2016
Dandelion	*Taraxacum officinale*	Not stated	Pinn and Pallett, 2002
Sage	*Salvia officinalis*	oral	Al-Ramahi et *al.*, 2013

3.2.4. Plants used for heatburn- digestive problems and abdominal pain

Plants used for heatburn/digestive problems and abdominal pain are summarized in Table 6.

Table 6. Plants used for heatburn/digestive problems and abdominal pain in pregnancy

Name	Scientific Name and Part	Method of Use	References
Elm	*Ulmus vulgaris* bark	powdered form mixed with water or chamomile tea; tablets	Stapleton, 1995
Meadowsweet	*Filipendula ulmaria*	Not stated	Stapleton, 1995
Iceland moss	*Centraria islandica*	Not stated	Stapleton, 1995
Potato	*Solanum tuberosum* tubers	juice	Stapleton, 1995
Fennel	*Foeniculum vulgare* leaves	tea	Gazzolin et *al.*, 2010
Aloe	*Aloe vera*	oral	Gazzolin et *al.*, 2010; Glover et *al.*, 2001.
Chamomile	*Matricaria recutita*	tea	Bishop et *al.*, 2011; Al-Ramahi et *al.*,2013; Hall et *al.*, 2012.
Peppermint	*Mentha piperita* Oil,leaves	tea	Weisner and Knöss,

			2017.
Golden cotula	*Matricaria aurea* aerial parts	oral,vaginal bath, inhalation,skin wash	Ali-Shtayeh et *al*., 2015.
Mastic tree	*Pistacia lentiscus* gum	decoction	Ali-Shtayeh et *al*., 2015.
Anise	*Pimpinella anisum*	Not stated	Ali-Shtayeh et *al*., 2015; Hall et *al*., 2011.
Caraway	*Carum carvi* seeds	decoction	Ali-Shtayeh et *al*., 2015.
Parsley	*Petroselinum crispum*	oral	Ali-Shtayeh et *al*., 2015.
Cumin	*Cuminum cyminum* grinded seeds	decoction	Ali-Shtayeh et *al*., 2015; Al-Ramahi et *al*.,2013.
Whiteworm wood	*Artemisia inculta* whole plant	decoction, inhalation	Ali-Shtayeh et *al*., 2015.
Mint	*Mentha spicata* aerial parts	decoction	Ali-Shtayeh et *al*., 2015; Al-Ramahi et *al*.,2013.
Wild thyme	*Origanum syriacum* leaves	infusions	Ali-Shtayeh et *al*., 2015; Koç et *al*., 2016; Koç et *al*., 2012.
Thyme	*Micromeria fruticosa* leaves	infusions	Ali-Shtayeh et *al*., 2015.
Rosemary	*Rosmarinus officinalis* leaves, flowers	decoction	Ali-Shtayeh et *al*., 2015; Al-Ramahi et *al*.,2013.
Common sage	*Salvia fruticosa* leaves, flowers	decoction	Ali-Shtayeh et *al*., 2015; Al-Ramahi et *al*.,2013.
Germander	*Teucrium chamaedrys* leaves	infusions	Ali-Shtayeh et *al*., 2015.
Cinnamon tree	*Cinnamomum verum* bark	oral	Ali-Shtayeh et *al*., 2015; Al-Ramahi et *al*.,2013.
Clove	*Syzygium aromaticum* fruit	decoction	Ali-Shtayeh et *al*., 2015.
Black cumin	*Nigella sativa* seeds	Not stated	Al-ramahi et *al*., 2013.
Mahaleb cherry	*Prunus mahaleb* seeds	infusions	Ali-Shtayeh et *al*., 2015.
Green Cordamom	*Elettaria cardamomum* seeds	decoction	Ali-Shtayeh et *al*., 2015.

Ginger	*Zingiber officinalis*	Not stated	Kıssal et *al.*, 2013; Holst et *al.*, 2011; Koç et *al.*, 2016.
Liqorice	*Glycyrrhiza glabra*	Not stated	Koç et *al*., 2016.
Raspberry	*Rubus ideus*	Not stated	Koç et *al*., 2016.
Rosehip	*Rosa canina*	Not stated	Koç et *al*., 2016.
Sage	*Salvia officinalis*	for diarrhoea	Koç et *al*., 2016.
	Sacrocephalus latifolius root	decoction	Towns and Andel, 2015.
Cucumber	*Cucumis sativus*	food	Khresheh, 2011.
Dry tea leaves	*Camellia sinensis* leaves	chewing	Khresheh, 2011.
lentils	*Lens culinaris*	chewing	Khresheh, 2011.
Linden	*Tilia sp.* leaves, flowers	beverage	Kıssal et *al., 2013.*
Menthol gel		topical	Odalovic et *al*., 2016.
Almond	*Prunus amygdalus*	oral	Al-Ramahi et *al*., 2013.
Caper	*Capparis spinosa*	Not stated	Al-Ramahi et *al*., 2013.

3.2.5.Plants used for anaemia

Plants used for anaemia in pregnancy are listed in Table 7.

Table 7. Plants used in anaemia in pregnancy

Name	Scientific Name	Method of use	References
Yellow Dock	*Rumex crispus*	tea	Stapleton,1995.
Nettles	*Urtica dioica*	tea	Stapleton, 1995; Koç et *al*., 2016
dandelion	*Taraxacum officinale*	tea	Stapleton,1995.
seaweeds		food	Stapleton,1995.
Floradix®	Contains; yeast extract, rosehip, wheat germ extract and other vitamins	concentrated liquid	Stapleton,1995; Bishop et *al*., 2011.
Spinach	*Spinacia oleraceae*	food	Ali-Shtayeh et *al*., 2015.
Date palm	*Phoenix dactylifera*	food	Ali-Shtayeh et *al*., 2015.
Gundelia	*Gundelia tournefortii*	food	Ali-Shtayeh et *al*., 2015.
Lentil	*Lens culinaris medicus*	food	Ali-Shtayeh et *al*., 2015.
Fenugreek	*Trigonella berythea* seeds	decoction	Ali-Shtayeh et *al*., 2015.
Cinnamon tree	*Cinnamomum verum* bark	oral	Ali-Shtayeh et *al*.,

			2015; Al-Ramahi et *al*., 2013.
Common mallow	*Malva sylvestris*	food	Ali-Shtayeh et *al*., 2015.
Wheat	*Tricitum aestivum* seeds	food	Ali-Shtayeh et *al*., 2015.
Pomagranate	*Punica granatum* fruits	food	Ali-Shtayeh et *al*., 2015.
Black Cumin	*Nigella ciliaris* seeds		Ali-Shtayeh et *al*., 2015.
Tomatoes	*Solanum lycopersicum* fruits	food	Ali-Shtayeh et *al*., 2015.
Dill	*Anethum graveolens*	Not stated	Koç et *al.*, 2016.
Rosehip	*Rosa canina*	tea	Koç et *al.*, 2016; Kıssal et *al*., 2013.
Thyme	Plant species is not stated	Not stated	Kıssal et *al*., 2013.
	Terminalia ivorensis bark	decoction	Towns and Andel, 2015.
Cranberry	*Vaccinium macrocarpon*		Kıssal et *al*., 2013.
Mulberry	*Morus sp.*	food	Koç et *al.*, 2016.
Cassia	*Cinnamomum cassia*		Koç et *al.*, 2016.
Fig	*Ficus carica* dried fruit		Koç et *al.*, 2016.

3.2.6.Plants used for infections (of the urogenital tract) in pregnancy

Pplants used fort he infections of the urogenital tract in pregnancy are summarized in Table 8.

Table 8. Plants used for the infections of the urogenital tract in pregnancy

Name	Scientific name	Method of Use	References
Barley	*Hordeum vulgare*	barley juice	Stapleton, 1995.
Cranberry	*Vaccinium macrocarpon*	juice,extract	Stapleton, 1995; Gazzolin et *al*., 2010; Weissner and Knöss, 2017; Trabace et *al.*, 2015; Pallivalipila et *al*., 2014; Holst et *al.*, 2011; Nordeng et *al*.,2011; Chung et *al*., 2017; Zagorodnikova et *al*., 2016; Louik et *al*., 2010; Broussard,2010.
Nettle	*Urtica dioica*	infusions	Stapleton, 1995.
Marigold	*Calendula officinalis*	sitz bath,ointment, infused oil, infusions	Stapleton, 1995.

Thyme	Plant species is not stated	sitz bath,tea	Stapleton, 1995.
Marshmallow	*Althea officinalis*	sitz bath,tea	Stapleton, 1995.
Cornsilk	*Zea mays*	tea	Stapleton, 1995.
Couchgrass	*Elymus repens*	tea	Stapleton, 1995.
Horsetail	*Equisetum sp.*	tea	Stapleton, 1995.
Liquorice root	*Glycyrrhiza glabra*	decoction	Stapleton, 1995; Gazzolin et *al.*, 2010.
Yarrow	*Achillea millefolium*	tea	Stapleton, 1995.
Agrimony	*Agrimonia eupatoria*	tea	Stapleton, 1995.
Plantain	*Plantago major*	tea	Stapleton, 1995.
Uva ursi	*Arctostophylos uva-ursi*	tea	Stapleton, 1995.
Oats	*Avena sativa*	infusions	Stapleton, 1995; Weissner and Knöss, 2017.
St.John's wort	*Hypericum perforatum*	infused oil,ointment, infusions	Stapleton, 1995.
Vervain	*Verbena officinalis*	infusions	Stapleton, 1995.
Scullcap	*Scutellaria sp.*	infusions	Stapleton, 1995.
Damiana	*Turnera diffusa*	infusions	Stapleton, 1995.
Lavender	*Lavendula angustifolia*	sitz bath, infusions	Stapleton, 1995.
Dandelion	*Taraxacum officinale*	decoction	Stapleton, 1995.
Burdock	*Arctium lappa*	decoction	Stapleton, 1995.
Witchhazel	*Hammamelis virgiana*	sitz bath	Stapleton, 1995.
Lemon balm	*Melissa officinalis*	infused oil, ointment	Stapleton, 1995.
Comfrey	*Symphytum officinale*	infused oil, ointment	Stapleton, 1995.
Chickweed	*Stellaria media*	infused oil, ointment	Stapleton, 1995.
Tea tree oil	*Melaleuca alternifolia*	added to sitz bath	Stapleton, 1995.
Melissa oil	*Melissa officinalis*	added to sitz bath	Stapleton, 1995.
Geranium oil	*Pelargonium graveolens*	added to sitz bath	Stapleton, 1995.
Garlic	*Allium sativum*	raw,local antiseptic,vaginal, massage	Stapleton, 1995; Ali-Shtayeh et *al*., 2015; Al-Ramahi et *al*., 2013.
Echinacea	*Echinacea purpurea*	oral preparations	Weissner and Knöss, 2017.
Fennel	*Foeniculum vulgare*	oral, vaginal bath	Ali-Shtayeh et *al*., 2015.
Parsley	*Petroselinum crispum*	decoction, vaginal bath	Al-Ramahi et *al*., 2013.
Fenugreek	*Trigonella berythea*	decoction, vaginal bath	Ali-Shtayeh et *al*., 2015.
Rosemary	*Rosmarinus officinalis*	decoction	Ali-Shtayeh et *al*., 2015.

Anise	*Pimpinella anisum*	tea	Al-Ramahi et *al*., 2013.
Sage	*Salvia officinalis*	vaginal	Al-Ramahi et *al*., 2013.

3.2.7.Plants used for mood changes, fatigue, stress, anxiety, sleeping disorders, relaxing, depression

Plants and plant formulae used for mood changes, fatigue, stress, sleeping disorders, relaxing, depression in pregnancy in the reviewed literatue are shown in Table 9.

Table 9. Plants and plant formulae used for mood changes, fatigue, stress, sleeping disorders, relaxing, depression in pregnancy.

Name	Scientific Name	Formulae or Parts Used	Method of Use	References
Raspberry leaf	*Rubus ideus*	formula	infusion	Stapleton, 1995
Peppermint	*Mentha piperita*		oil, infusion	Stapleton, 1995; Yadzkhasti and Pirok, 2016; Kıssal et *al*., 2013; Al-ramahi et *al*., 2013.
Spearmint	*Mentha spicata*		infusion	Stapleton, 1995.
Lemon balm	*Melissa officinalis*	leaves	infusion	Stapleton, 1995; Gazzolin et *al*., 2010; Koç et *al*.,2012; Koç et *al*.,2016;
Burdock	*Arctium lappa*	formula	infusion	Stapleton, 1995.
Blessed thistle	*Silybum marianum*			
Vervain	*Verbena officinalis*			
Orange peel	*Citrus aurantium* var. dulce			
Hops	*Humulus lupulus*	formula	infusion	Stapleton, 1995.
Lime blossom				
Scullcap	*Scutellaria sp.*			
Valerian	*Valeriana officinalis*	root	tincture	Stapleton, 1995; Weissner and Knöss, 2017; Damase-Michel et *al*.,2004; Pinn and Pallett, 2002; Trabace et *al*., 2015; Zagorodnikova et *al*., 2016.

Ginseng	*Panax ginseng*	root	tincture	Stapleton, 1995; Gibson et *al*., 2001; Bishop et *al*., 2011; Glover et *al*., 2003; Broussard, 2010.
Rosemary	*Rosmarinus officinalis*	leaves	tincture	Stapleton, 1995.
Motherwort	*Leonurus cardiaca*	Not stated	tincture	Stapleton, 1995.
Lavender	*Lavendula angustifolia*	flowers	Essential oil	Yadzkhasti and Pirak, 2016
Magnesium	-	-	-	Odalovic et *al*.,2016.
Horse Chestnut	*Aesculus hippocastanum*	seeds	gel	Odalovic et *al*.,2016.
Marigold	*Calendula officinalis*	flowers	gel	Odalovic et *al*.,2016.
Chamomile	*Matricaria recutita syn. Matricaria chamomile*	flowers	oral,topical,tea	Gazzolin et *al*., 2010; Pallivalipila et *al*., 2014; Glover et *al*., 2003; Mousally and Berard, 2010;
Sepia	*Sepia officinalis*	-	homeopathic	Bishop et *al*.,2011.
Pulsatilla	*Pulsatilla nigricans*	Not stated	homeopathic	Bishop et *al*.,2011.
St.John's wort	*Hypericum perforatum*	herb	tea, tincture, granules	Bishop et *al*.,2011; Gazzolin et *al*., 2010; Koç et *al*., 2012; Moretti et *al*., 2009; Pinn and Pallett, 2002.
Hawthorn	*Crataegus laevigata*	Not stated	Not stated	Damase-Michel et *al*., 2004
	Ballota nigra	Not stated	Not stated	Damase-Michel et *al*., 2004
Passion flower	*Passiflora incarnata*	flowers	tablet	Damase-Michel et *al*., 2004; Öztürk and Kalaycı, 2018.
Mastic tree	*Pistacia lentiscus*	gum,leaves	decoction	Ali-Shtayeh et *al*., 2015.
Anise	*Pimpinella anisum*	seeds	decoction	Ali-Shtayeh et *al*., 2015; Al-Ramahi et *al*., 2013.
Caraway	*Carum carvi*	grinded seeds	decoction	Ali-Shtayeh et *al*., 2015.
Parsley	*Petroselinum crispum*	aerial parts	decoction	Ali-Shtayeh et *al*., 2015;Koç et *al*.,2016.
Golden Cotula	*Matricaria aurea*	aerial parts	decoction	Ali-Shtayeh et *al*., 2015.
	Micromeria fruticosa	leaves	infusion	Ali-Shtayeh et *al*., 2015.

Rosemary	*Rosmarinus officinalis*	leaves,flowers	decoction	Ali-Shtayeh et *al*., 2015.
Dill	*Anethum graveolens*	Not stated	Not stated	Koç et *al*., 2016.
Flaxseed	*Linum usitatisimum*	seed	Not stated	Koç et *al*., 2016
Fennel	*Foeniculum vulgare*	fruits	Not stated	Koç et *al*., 2016; Koç et *al*.,2012.
Sage	*Salvia officinalis*	leaves	Not stated	Koç et *al*., 2016; Koç et *al*.,2012.
Thyme	Plant species is not stated	Not stated	oral	Koç et *al*., 2016; Koç et *al*.,2012; Al-Ramahi et *al*.,2013.
Lemon	*Citrus lemon*	fruit	Tea with mint	Kıssal et *al*., 2013.

3.2.8. Plants used for varicose veins, constipation and piles

Plants used for varicose veins, constipation and piles in pregnancy in the reviewed literature are summarized in Table 10.

Table 10. Plants used for varicose veins, constipation and piles in pregnancy

Name	Scientific name	Method of Use	References
Lineseed	*Linum usitatisimum*	food,oil	Mousally and Berard, 2010; Koç et *al*.,2016; Samavati et *al*., 2017; Stapleton, 1995; Weissner and Knöss, 2017.
Raw garlic	*Allium sativum*	food	Stapleton, 1995; Gibson et *al*., 2001; Al-Ramahi et *al*.,2013.
Raw onions	*Allium cepa*	food	Stapleton, 1995.
Fresh parsley	*Petroselinum crispum*	food, infusions	Stapleton, 1995.
Fresh nettles	*Urtica dioica*	food, infusions	Stapleton, 1995; Koç et *al*.,2016.
Comfrey	*Symphytum officinale*	lotions,compresses, creams and decoctions,gel	Stapleton, 1995.
Marshmallow	*Althea officinalis*		
Marigold	*Calendula officinalis*		
Plantain	*Plantago major*		
Yarrow	*Achillea millefolium*	Formula	
Hawthorn berries	*Crataegus sp.*		

Oak	*Quercus sp.*	decoction	Stapleton, 1995.
Witchhazel	*Hammamelis virginiana*		
Dandelion	*Taraxacum officinale* root	decoction	Stapleton, 1995.
	Ranunculus ficaria dried root	cream, added to cream formula	Stapleton, 1995.
Cypress	*Cupressus sp.* oil		
Peppermint	oil		
Geranium	*Pelargonium graveolens* oil		
Rhubarb	*Rheum emodi*	food	Samavati et *al.*2017.
Fenugreek	*Foenum graecum* seeds	Not stated	Samavati et *al*., 2017; Orief et *al*., 2012.
Senna	*Cassia occidentalis* seeds	tea	Stapleton, 1995; Samavati et *al*., 2017; Bishop et *al*., 2011; Weissner and Knöss, 2017; Pallivalapila et *al*.,2014; Koç et *al*.,2016; Koç et *al*., 2012.
	Plantago ovata granules	Not stated	Odalovic et *al.*, 2016; Weissner and Knöss, 2017.
Wheat dextrin	Not stated		Odalovic et *al.*, 2016
Probiotics	Probiotic species are not stated		Weisner and Knöss; 2017.
Aloe	*Aloe vera*	Not stated	Gazzolin et *al*., 2010; Weissner and Knöss, 2017.
Horse Chestnut	*Aesculus hippocastanum*	gel	Weissner and Knöss, 2017; Damase-Michel et *al*., 2004; Odalovic et *al*., 2016.
Castor oil	*Ricinus communis*	oil	Weissner and Knöss, 2017
Grape vine	*Vitis vinifera*	seed oil	Damase-Michele et *al*., 2004.
Gingko	*Gingko biloba*	Not stated	Damase-Michele et *al*., 2004; Glover et *al.*, 2003; Chung et *al.*, 2017; Tiran, 2003.
Anise	*Pimpinella anisum* seeds	decoction	Ali-Shtayeh et *al*., 2015; Al-Ramahi et *al*.,2013; Koç et *al.*, 2016.

Fennel	*Foeniculum vulgare* seeds,leaves	decoction	Ali-Shtayeh et *al*., 2015
Lettuce	*Lactuca sativa*	food	Ali-Shtayeh et *al*., 20151
Grean tea	*Camelia sinensis*	tea	Al-Ramahi et *al*.,2013; Koç et *al*., 2016; Kıssal et *al*.,2013.
Cucumber	*Cucumis sativus*	food	Ali-Shtayeh et *al*., 2015.
Hibiscus	*Hibiscus sabdariffa* flowers	tea	Koç et *al*., 2012.
Calendula	*Calendula officinalis*	gel	Weissner and Knöss, 2017.
Ceylon Cinnamon Tree	*Cinnamomum verum* bark	Not stated	Al-Ramahi et *al*.,2013.

3.2.9. Plants used for painful pre-labour and pain relief

Plants used for painful pre-labour and pain relief in pregnancy in the reviewed literature are summarized in Table 11.

Table 11. Plants used for painful pre-labour and pain relief in pregnancy.

Name	Scientific name	Method of Use	References
Lime blossom	*Citrus aurantiifolia* blossom	Formula,infusion	Stapleton, 1995.
St. John's Wort	*Hypericum perforatum*		
Passion flower	*Passiflora incarnata*		
Scullcap	*Scutellaria sp.*		
Chamomile	*Marticaria chamomile*		
Melissa	*Melissa officinalis*		
Crampbark	*Viburnum opulus* bark	aromatherapy, tincture	Stapleton, 1995.
Anemone	*Anemone coronaria*		
Bitter orange	*Citrus aurantium* peel		
Hops	*Humulus lupulus*		
Valerian	*Valeriana officinalis*	Not stated	Stapleton, 1995.
Formula	*Cympobogon citratus*	decoction, maceration	Yemele et *al*., 2015.
	Sida veronicifolia		
	Crassocephalum bauchieuse		
	Commelina benghalensis		
	Nelsonia canescens		
	Aloe buttnerii		

Lavender	*Lavendula angustifolia* oil	Aromatherapy formula	Mousley, 2005.
Clarysage	*Salvia sclarea* oil		
Frankincence	*Boswellia sp* resin		

3.2.10. Plants used for respiratory tract infections; common cold, sore throat, allergies

Plants used for respiratory tract infections; common cold, sore throat and allergies in pregnancy in the reviewed literature are summarized in Table 12.

Table 12. Plants used for respiratory tract infections, common cold, sore throat and allergies.

Name	Scientific name	Method of use	References
Echinacea	*Echinacea purpurea*	extracts, juice,tea, tablets, tinctures	Gibson et *al*.,2001; Gazzolin et *al*.,2010; Weisner and Knöss, 2017; Pallivalapila et *al*., 2014; Glover et *al*.,2013; Holst et *al*., 2012; Nordeng et *al*., 2011; Chung et *al*.,2017; Tsui et *al*., 2001; Kıssal et *al*., 2017; Hall et *al*., 2012; Louik et *al*.,2010; Broussard et *al*., 2010.
Grapefruit, Rosehip	*Citrus paradisi* *Rosa canina*	food,tea	Odalovic et *al*., 2016; Pallivalapila et *al*., 2014; Tsui et *al*., 2001;Koç et *al*.,2016; Kıssal et *al*.,2017; Koç et *al*., 2012.
Menthol		mentholated ointment	Odalovic et *al*., 2016.
Propolis		oral, inhalation,topical	Gazzolin et *al*.,2010; Trabace et *al*., 2015.
Herbal cough medicine	Plants species are not stated	Unknown formula	Bishop et *al*.,2011.
Ivy	*Hedera helix*	Not stated	Weisner and Knöss, 2017.
Thyme	*Thymus vulgaris, Thymian zygis*	tea	Al-Ramahi et *al*.,2013.
Chamomile	*Matricaria chamomile*	homeopathy,tea	Damase-Michel et *al*., 2004; Koç et *al*., 2016;

			Kıssal et *al*.,2017; Koç et *al*., 2012. Al-Ramahi et *al*.,2013.
	Erysimum officinale	homeopathy	Damase-Michel et *al*., 2004.
Caraway	*Carum carvi* grinded seeds	decoction	Ali-Shtayeh et *al*., 2015.
Fennel	*Foeniculum vulgare* seeds,leaves	decoction	Ali-Shtayeh et *al*., 2015; Kıssal et *al*.,2017; Koç et *al*., 2012; Al-Ramahi et *al*.,2013.
White wormwood	*Artemisia inculta*	decoction, inhalation	Ali-Shtayeh et *al*., 2015.
Golden cotula	*Matricaria aurea* aerial parts,seeds	decoction	Ali-Shtayeh et *al*., 2015.
Fenugreek	*Trigonella berythea* seeds	decoction	Ali-Shtayeh et *al*., 2015.
Wild thyme	*Origanum syriacum* aerial parts	infusion	Ali-Shtayeh et *al*., 2015.
Thyme	*Micromeria fruticosa* leaves	infusion	Ali-Shtayeh et *al*., 2015.
Lemon	*Citrus lemon* flowers,fruits	oral,tea	Al-Ramahi et *al*.,2013.
Eucalyptus	leaves	oil	Pallivalapila et *al*., 2014.
Aniseed	*Pimpinella anisum*		Al-Ramahi et *al*.,2013.
Beet		for asthma	Koç et *al*., 2016.
Clove	*Syzigium aromaticum*	for cough	Koç et *al*., 2016.
Chilli pepper	*Capsicum annuum*	Not stated	Koç et *al*., 2012; Koç et *al*., 2016.
Cinnamon	*Cinnamomum sp.*		Koç et *al*., 2016.
Linden	*Tilia sp.*	tea	Koç et *al*., 2016; Koç et *al*., 2012; Kıssal et *al*.,2017.
Ginger	*Zingiber officinale*	oral	Kıssal et *al*.,2017; Koç et *al*., 2016; Koç et *al*., 2012; Al-Ramahi et *al*.,2013.
Mint	*Mentha piperita* with lemon	tea	Al-Ramahi et *al*.,2013; Koç et *al*., 2016; Kıssal et *al*.,2017.
Sage	*Salvia officinalis*	tea	Koç et *al*., 2016; ; Koç et *al*., 2012; Al-Ramahi et *al*.,2013.
Elder	*Sambucus nigra*	Not stated	Nordeng et *al.*, 2011; Tsui et *al.*, 2001.
Cranberry	*Vaccinum macrocarpon*	Not stated	Kıssal et *al*.,2017.
Liqorice	*Glycyrrhiza glabra*	for sinusitis	Koç et *al*., 2012.

	Trigonella foenum-graecum	for cough,oral	Al-Ramahi et *al*.,2013.
Guava	*Psidium guajava* leaves	Not stated	Al-Ramahi et *al*.,2013.

3.2.11. Plants used for induction of labour and to facilitate delivery

Plants used for induction of labour and to facilitate delivery in pregnancy in the reviewed literature are summarized in Table 13.

Table 13. Plants used for induction of labour and to facilitate delivery

Name	Scientific Name	Formula or Parts Used	Method of use	References
Black cohosh	*Cimifuga rasemosa*	Mother's cordial	homeopathy	Bishop et *al.*, 2011;Hall et *al*.,2012;Pinn and Pallett, 2002;Tiran, 2003; Ernst,2002.
Blue cohosh	*Caulophyllum thalictroides*		homeopathy	
Squaw vine	*Mitchella repens*			
False unicoorn root	*Chamaelirium luteum*			Hall et *al*, 2012.
Raspberry	*Rubus ideus*	leaves	tablets 2*1.2g/day from 32 weeks	Hall et *al*., 2012;Pallivalipila et *al*., 2014;Glover et *al*., 2013;Holst et *al*., 2011;Nordeng et *al*.,2011;Tsui et *al*., 2001; Kıssal et *al*., 2017; Tiran, 2006; Hall et *al*.,2012; Pinn and Pallett, 2002; Broussard et *al*., 2010;Tiran, 2003;Holst et al., 2009.
Castor oil	*Ricinus communis*	seed	Not stated	Hall et *al*., 2012 ; Hall et *al*., 2012; Pinn and Pallett, 2002;Al-Ramahi et *al*., 2013; Ernst, 2002.
Evening primrose	*Oenothera biennis*	oil	orally, vaginally	Hall et *al*.,2012; Bishop et *al*., 2011; Ernst, 2002.
Arnica	*Arnica montana*	Not stated	homeopathic	Hall et *al*.,2012.
Pulsatilla	*Pulsatilla*	Not stated	homeopathic	Hall et *al*.,2012

	nigricans			
Gelsemium	*Gelsemium sempervirens*	Not stated	homeopathic	Hall et *al.*,2012.
Caraway	*Carum carvi*	grinded seeds	decoction	Ali-Shtayeh et *al*., 2015; Al-Ramahi et *al*., 2013.
Date	*Phoenix dactylifera*	fruit	food	Ali-Shtayeh et *al*., 2015; Al-Ramahi et *al*., 2013.
	Trigonella berythea	seeds	decoction	Ali-Shtayeh et *al*., 2015.
Saffron	*Crocus sativus*	flowers	infusion	Ali-Shtayeh et *al*., 2015.
Cinnamon	*Cinnamomum verum*	bark	oral	Ali-Shtayeh et *al*., 2015; Al-Ramahi et *al*., 2013.
Pink flax	*Linum pubescens*	oil	oral	Ali-Shtayeh et *al*., 2015.
Roselle	*Hibiscus sabdariffa*	leaves	decoction	Ali-Shtayeh et *al*., 2015.
apple	*Malus domestica*	fruit	food	Ali-Shtayeh et *al*., 2015.
Selush	Labour accelerating product of Malasia	formula	Not stated	Yusof et *al*., 2016.
Salindah	Labour accelerating product of Malasia	formula	Not stated	Yusof et *al*., 2016.
	Anastatica hierochuntica	Not stated	Not stated	Yusof et *al*., 2016.
	Labisia pumila	Not stated	Not stated	Yusof et *al*., 2016.
	Ageratum conyzoides	leaves	enema	Malan et *al*., 2011.
	Cyathula prostata	leaves	enema	Malan et *al*., 2011.
	Heliospermum indicum	leaves	enema	Malan et *al*., 2011.
	Voacagana africana	leaves	enema	Malan et *al*., 2011.
	Sida veronicifolia	Not stated	Not stated	Yemele et *al.*, 2015.
	Hibiscus noldea	Not stated	Not stated	Yemele et *al.*, 2015.
	Neldonia canascens	Not stated	Not stated	Yemele et *al.*, 2015.
	Aloe butnerii	Not stated	Not stated	Yemele et *al.*, 2015.

Goldenseal	*Hydrastis canadensis*	Not stated		Tsui et *al.*, 2001; Pinn and Pallett, 2002.
Moxa mugwort	*Artemisia vulgaris*	Not stated	Not stated	Tiran, 2006.
Motherwort	*Leonorus cardiaca*	Not stated	Not stated	Pinn and Pallett, 2002.
Mint	*Mentha piperita*	leaves	Not stated	Al-Ramahi et *al.*, 2013.
Cumin	*Cuminum cyminum*	fruits	oral	Al-Ramahi et *al.*, 2013.

3.2.12. Plants contraindicated in pregnancy

The reviewed articles also mentioned plants which; due to their oxytocic, cytotoxic, abortifacient, and contraceptive properties, are contraindicated in pregnancy. Plants used for oxytocic/ cytotoxic/ abortifacient/ contraceptive properties: These are the plants which are contraindicated in pregnancy are summarized in Table 14.

Table 14.Plants contraindicated in pregnancy

Name	Scientific name and part used	Contraindication	References
Greater celandine	*Chelodonium majus*, herb	cytotoxic	Weisner and Knöss, 2017.
Peoni root	*Paeonia lactiflora, Paeonia veitchii.* root	abortifacient	Weisner and Knöss, 2017.
Kava kava	*Piper methysticum*, rhizome	Tranquilizer	Weisner and Knöss, 2017; Glover et *al*., 2013; Conover, 2003.
Cat's claw	*Unicaria tomentosa*, bark	contraceptive	Weisner and Knöss, 2017.
Gingko	*Gingko biloba* , leaves dry extract	drug interactions	Weisner and Knöss, 2017; Tiran, 2003;Conover, 2003.
Motherwort	*Leonorus cardiaca* herb	Not stated	Weisner and Knöss, 2017.
Castor oil	*Ricinus communis* seed oil	purgative	Weisner and Knöss, 2017.

Willow bark	*Salix sp.* bark	Not stated	Weisner and Knöss, 2017.
	Agapanthus africanus	oxytocic	Veale et *al*., 2000.
	Clivia miniata	oxytocic	Veale et *al*., 2000.
Inembe	*Gunnera perpensa, Rhoicissus tridentata subs. cunefolia, Cyphostemma natalitum*	abortifacient	Varga and Veale, 1997.
Black cohosh	*Cimifuga racemosa*	binds to oestrogen receptors	Conover, 2003.
Blue cohosh	*Caulophyllum thalictroides*	teratogenic, abortifacient,oestrogenic effect, newborn toxicity	Conover,2003; Tiran, 2003.
Roman chamomile	*Chamaemelum nobile*	abortifacient	Conover, 2003; Pinn and Pallett, 2002.
Chasteberry	*Vitex agnus-castus*	antiandrogenic, uterine stimulant	Conover, 2003.
Goldenseal	*Hydrastis canadensis*	uterine stimulant	Conover, 2003.
Horehound,white	*Marrubium vulgare*	abortifacient	Conover, 2003.
Liqorice	*Glycyrrhiza glabra*	oestrogenic activity, abortifacient	Conover, 2003.
Mistletoe	*Viscum album*	uterine stimulant, aborttifacient	Conover, 2003.
Mugwort	*Artemisia vulgaris*	abortifacient	Conover, 2003.
Nettle	*Urtica dioica*	uterine stimulant, aborttifacient	Conover, 2003.
Pennyroyal	*Mentha pulegium*	uterine stimulant, aborttifacient	Conover, 2003.
Rue	*Ruta graveolens*	uterine stimulant, abortifacient	Conover, 2003.
Tansy	*Tanacetum vulgare*	uterine stimulant, abortifacient	Conover, 2003.
Yarrow	*Achillea millefolium*	abortifacient	Conover, 2003.

Feverfew	*Tanacetum parthenium* extract	abortifacient, may cauase haemorrage in the newborn	Conover, 2003.
Garlic	*Allium sativum*	medicinal doses should be avoided ; it may act as an abortifacient	Conover, 2003.
Ginger	*Zingiber officinale* rhizoma	doses over 1g/day should be avoided	Conover, 2003.
Glucosamine		suspected of inhibiting DNA replication	Conover, 2003.
Melatonin			Conover, 2003.
St John's wort	*Hypericum perforatum*	Not stated	Conover, 2003.

3.2.13.Other plants used for various indications

Plants used for various indications like headlice, stretch marks, skin problems, chopped lips, gestational diabetes, dental pain, hypertension, atopic dermatitis, swelling of the legs, weight loss are shown in Table 15. Diuretic and antiseptic plants are also shown.

Table 15. Plants used for various indications

Name	Scientific name	Indication	References
Coconut	*Cocos nucifera* oil	head lice	Glover et *al*, 2013.
Rosemary	*Rosmarinus officinalis* leaves,decoction	strech marks	Damase-Michel et *al*., 2004.
Aloe	*Aloe vera* cladodes,ointment	strech marks	Damase-Michel et *al*., 2004.
Almond oil	*Prunus dulcis* oil	strech marks	Gazzolin et *al*., 2010.
Bee pollen		Chopped lips	Pallivalapila et *al*., 2014.
Tea tree oil	*Melaleuca alternifolia* oil	antiseptic	Pallivalapila et *al*., 2014
Aloe	*Aloe vera*	skin problems	Pallivalapila et *al*., 2014; Nordeng et *al*., 2011.
Evening primrose	*Oenothora biennis* oil	skin problems	Pallivalapila et *al*., 2014; Tsui et *al*., 2001.
Cocoa butter	*Theobroma cacao* oil	skin problems	Gazzolin et *al*., 2010.

Germander	*Teucrium chamaedrys* aeral parts,infusion	gestational diabetes	Ali-Shtayeh et *al*., 2015.
Sage	*Salvia officinalis* mouthwash	dental pain	Al-Ramahi et *al*., 2013.
Clove	*Syzygium aromaticum* oil	dental pain	Pallivalapila et *al*., 2014; Al-Ramahi et *al*., 2013.
Peppermint-lemon		dental pain,diuretic	Kıssal et *al*., 2017.
Spanish Lavender	*Lavendula stoechas*	hypertension	Koç et *al*., 2012.
Beet	*Beta vulgaris*	hypertension	Koç et *al*., 2016.
Garlic	*Allium sativum*	hypertension	Koç et *al*., 2016; Orief et *al*., 2014; Tsui et *al*., 2001; Koç et *al*., 2012.
Onion	*Allium cepa*	hypertension	Koç et *al*., 2016.
Starfruit	*Averrhoa carambola* fruit	hypertension	Koç et *al*., 2016.
Mistletoe	*Viscum album*	hypertension	Koç et *al*., 2012.
Korean Herbal Medicine (decoction of plant material)	*Rehmannia glutinosa, talcum, Glycyrrhiza glabra, Atractylodes chinensis, Plantago asiatica, Gentiana scabra, Akebia quinata, Raphanus sativus, Adenophora triphylla, Smilax china, Scutellaria baicalensis, Angelica gigas*	atopic dermatitis	Kim et *al*., 2013.
Korean Herbal Medicine (decoction of plant material)	*Phellodendron amurense, Sophora flavescens, Liriope platyphylla,Perilla frutescens var. Acuta, Schizonepeta tenuifolia,*	atopic dermatitis	Kim et *al*., 2013.
	Chamaecrista rotundifolia	strengthening (malaria)	Towns and Andel, 2011.
	Cympobogon citratus	strengthening (malaria)	Yemele et *al*., 2015.

	Cympobogon citratus	swelling of the legs, reducing oedema, diuretic	Yemele et *al*., 2015.
Anise	*Pimpinella anisum*	diuretic	Al-Ramahi et *al*., 2013.
Ephedra (banned)	*Ma huang*	weight loss	Broussard et *al*., 2010.

3.3. Aromatherapy Use in Pregnancy

The prevalence of CAM use in pregnancy had been commonly reported to range between 20% and 60%. The most popular CAM used by pregnant women include herbal medicine, vitamin and mineral supplements, relaxation therapies and aromatherapy (Hall et *al*.,2011.)

Aromatherapy, a branch of herbal science, promotes physical, emotional and psychological health by using collection of methods for skillful and controlled use of essential oils (Yazdkhasti and Pirak, 2016).

CAM therapies aiding relaxation and promoting sleep like aromatherapy,increase the mother's ability to cope with painful stimuli by increasing endorphin release (Tiran and Chummun, 2004; Bastard and Tiran, 2006).

Using essential oils may enhance the analgesic action of massage by their effects on the limbic system therefore reducing the pain experienced by the patient (Tiran and Chummun, 2004).

In a study, self-prescribed aromatherapy oils were used by 15.2% of pregnant women for indications like allergies or hayfever, urinary tract infection, headaches/migraines (Sibbritt et *al*., 2014).

Pregnancy symptoms for which women use aromatherapy are shown in Table 16.

Table 16. Pregnancy symptoms treated by aromatherapy

	Pregnancy Indication	References
1.	Nausea	Sibbritt et *al*., 2014; Yazdkhasti and Pirak, 2016; Bishop et *al*., 2011.
2.	Headache/ migraine	Sibbritt et *al*., 2014.
3.	Asthma	Sibbritt et *al*., 2014.
4.	Urinary tract infection	Sibbritt et *al*., 2014.
5.	Allergies/ hayfever	Sibbritt et *al*., 2014.
6.	Anxiety and depression	Sibbritt et *al*., 2014
7.	Haemorroids	Sibbritt et *al*., 2014
8.	Insomnia	Sibbritt et *al*., 2014; Bowe et *al*., 2015.
9.	Labour pain	Sibbritt et *al*., 2014; Tiran, 2006.
10.	Edema	Sibbritt et *al*., 2014
11.	Relaxation	Sibbritt et *al*., 2014; Tiran, 1996.

The aromatherapy essential oils used in pregnancy can be viewed in Table 17.

Table 17. Aromatherapy essential oils used in pregnancy

Essential Oil	Method of Use	Indication	References
Citrus lemon- lemon	inhalation	Nausea and vomiting of pregnancy	Yavari et *al*.,2014.
Mentha piperita- Peppermint	inhalation	Nausea and vomiting of pregnancy	Yavari et *al*.,2014; Bishop et *al*., 2011; Pasha et *al*., 2012.
Peppermint- Lavender	inhalation	Nausea and vomiting of pregnancy	Yavari et *al*.,2014.
Lavendula angustifolia- Lavender	inhalation	Nausea and vomiting of pregnancy, for restlessness for relaxing effect	Igarashi, 2013; bastard and Tiran, 2006; Fowler and Wall, 1997.
	Aromatherapy massage	Stress and immune function	Chen et *al*., 2017
	Aromatherapy massage	Reduce severity of labour pain and duration of labour	Yazdkhasti and Pirak, 2016.
Eucalyptus	Aromatherapy		Bishop et *al*., 2011.
Spearmint			
Neroli- *Citrus aurantium* blossom			
Chamomile			
Lavender			

Essential oils not specified		Intrapartum analgesia	Tiran,2006; Sibbritt et *al*., 2014.
Clarysage- Frankincence essential oil blend (1% blend)	Bath, footbath, compress, perineal lavage or spray, massage	Intrapartum analgesia	Mousley, 2005.
Lavender- Roman chamomile- mandarin essential oils (1% blend)		Intrapartum analgesia	Mousley, 2005.
Petitgrain- *Citrus aurantium* leaves	inhalation	Relaxing effect	Igarashi, 2013.
Bergamot- *Citrus aurantium* var.*bergamia*	inhalation	Reaxing effect	Igarashi, 2013.

3.3.1. Availability of aromatherapy

In Germany, aromatherapy is available in 76.6% of obstetric departments(Sibbritt et *al*.,2014). Acupuncture, aromatherapy, and homeopathy are the most widely used CAM in Germany (Münstedt et *al*., 2009). In a study by Münstedt et *al*., 2009; aromatherapy was mainly offered for prophylaxis (58.8%) but in 40% of departments it was available for both prophylaxis and treatment of clinical problems.

Massage therapy to both staff and clients is provided in about half (54%) of English maternity units (Hall et *al*., 2012). About thierce of the participants in a study recommended aromatherapy and more than half of English maternity units provide aromatherapy (Tiran and Chummun, 2004).

Main CAM providers are midwives both in England and Germany (Tiran, 2006; Nordeng et *al*., 2011).

Burns et *al*.,2000; successfully administered essential oils to over 8000 women for intrapartum analgesia, side effects were less than 1%.All of the side effects were minor, and none affecting the foetus.

3.3.2. Toxicity of essential oils

In aromatherapy, it is imperative to know that toxicity is related to dose and therefore mode of delivery. Jasmine, juniper, peppermint, clove, cedarwood, sage and rosemary are all the examples of aromatherapy essential oils that should be avoided during pregnancy, with some possessing abortidacient properties(Sibbritt et *al*., 2014).Clarysage, fennel and frankincence, due to their emmenagogic properties, should be restricted to use in the third trimester (Sibbritt et *al*., 2014).

In her book (Buckle J,2016), Jane Buckle addresses esssential oil toxicity and contraindications. She states that ‘ because essential oils are a mixture of different chemical compounds,it is more difficult to determine the toxicity of mixtures raher than a single compound. When mixtures or blends of essential oils are used,the matter is even more complicated because mixed components can interact to produce an additive, synergistic or antagonistic effect’.

The possibility of overdosing and risk of toxic reaction increases if an essential oil is administered orally(Buckle,2016).

Contact dermatitis, allergic contact dermatitis (Fowler and Wall, 1997), photosensitization, or chemical burns may occur when essential oils are administered topically. Skin reactions are dose dependent on the dilution of essential oils(Buckle,2016). A risk of toxicity to the foetus does not necessarily occur when essential oils cross the placenta(Bastard and Tiran, 2006).

Selection of essential oils to avoid using during pregnancy are; aniseed (*Pimpinella anisum*), cypress (*Cupressus sempervirens*), dill (*Anetum graveolens*), hyssop (*Hyssopus officinalis*), Spanish lavender (*Lavendula stoechas*) and star anise (*Illicium verum*)(Buckle,2016).

3.4.Plants Used in Pregnancy and Their Comparison of Availability in Cyprus

There is no study searching the plants used in pregnancy in Cyprus, so comparing the plants used in pregnancy in literature to their availability in Cyprus may be a good

starting point for future researchers. Plants used in pregnancy and their comparison of availability in Cyprus are shown in Table 18.

Table 18. Plants used in pregnancy and their comparison of availability in Cyprus.

Plant used in pregnancy	Grown in Cyprus	Species grown in Cyprus	Medical Use
Aloe vera	(-) imported, Cultivated for ornamental purpose	-	gall disorders, immune system syimulant, antifungal, burns, sanative, skin irritations,blood purification, detoxification (Karousou and Deirmentzoglou, 2011).
Astragalus membranaceus	(-)	*A.pelenicus, A.asterias*	(Viney, 1996).
Artemisia absinthium	(+)	-	Gastritis, intestinal disorders, compress, dizziness, insomnia, against stings ((Karousou and Deirmentzoglou, 2011).
Anethum graveolens	(+)	-	dyspepsia, flatulence, stomach ache, hiccup, diuretic (Karousou and Deirmentzoglou, 2011).
Achillea millefolium	(+)	-	haemorrhoids,hypotension, diaphoretic, common cold, dysmenorrhoea, gynocological disorders, uterus spasms, antifungal, antiseptic, haaemostatic, diuretic, cystitis infection, anti-inflammatory (Karousou and Deirmentzoglou, 2011). (Viney, 1996).
Anemone coronaria	(+)	-	A tincture from the flowers used in medicine (Viney, 1996).
Ballota nigra	(+)	-	
Beta vulgaris	(+)	-	
Calendula officinalis	(+)	-	colitis, constipation, moles, antiseptic, bruises, sanative(Karousou and Deirmentzoglou, 2011).
Cannabis sativa	(+)	-	
Citrus aurantium	(+)cultivated	-	throat, acne, antiemetic, influenza, depression, insomnia, dysmenorrhoea, antifungal, antiseptic(Karousou and Deirmentzoglou, 2011).
Cupressus sp.	(+)	*C.sempervirens*	to treat bowel troubles and anaemia (Viney, 1996).
Crocus sativus	(-)	*C.hartmannianus, C. veneris*	
Chelodonium majus	(-) imported	-	liver disorders, cataract, herpes, antiseptic(Karousou and Deirmentzoglou, 2011).
Daucus carota	(+)	-	

Echinacea angustifolia	(-)imported	-	laryngytis, dyspepsia, immune system stimulant, headache, bronchitis, common cold, against stings and snakje bites, antiseptic, blood purification, febrifuge, tonic(Karousou and Deirmentzoglou, 2011).
Foeniculum vulgare	(+)	-	(diuretic, galactogogue) (Viney, 1996);,(colic, dyspepsia, faltulence(Karousou and Deirmentzoglou, 2011).
Ficus carica	(+)	-	fruit has a medical tradition. Milky juice was used to treat boils, warts, and insect stings (Viney, 1996).
Foenum graecum (Trigonella foenum-graecum)	(+)	-	(+)(Viney, 1996)
Glycyrrhiza glabra	(+)	-	adrenal disorders, hoarseness, laryngitis, duodenal ulcer, gastric ulcer and gastritis, asthma, cough, pneumonia, oily skin, constipation (Karousou and Deirmentzoglou, 2011).
Gallium aparine	(+)	-	for treating wounds and ulcers (Viney,1996);, diuretic (Karousou and Deirmentzoglou, 2011).
Gundelia turneforti	(+)	-	
Hypericum perforatum	(+)	-	gastric ulcer, gastritis, dyspepsia, duodenal ulcer, calmative, depression, insomnia(Karousou and Deirmentzoglou, 2011).
Hedera helix	(+)	-	
Lavendula angustifolia	(+)cultivated	-	Hypertension, tachycardia, bloating, colic, dyspepsia, intestinal parasites, spasmolytic, diaphoretic, calmative, depression, headache, insomnia, migraine, antiseptic, diuretic(Karousou and Deirmentzoglou, 2011).
Linum usitatisimum	(+)	-	
Lactuca sativa	(+)	-	
Mentha spicata and M. Longifolia	(+)	-	tonsilitis,headaches (Viney,1996) colitis, diarrhoea, dyspepsia, stomach disorders, calmative, common cold, dysmenorrhoea, tonic (Karousou and Deirmentzoglou, 2011).
Mentha piperita	(+) cultivated	-	hypotension, igmoritis,colitis, diarrhoea, dyspepsia, liver disorders, calmative, headache, stomach disorders, migraine, nervous tonic, bad breath, common cold,

			dysmenorrhoea, rheumatisms, tonic (Karousou and Deirmentzoglou, 2011).
Malva sylvestris	(+)cultivated	-	infusions of leaves and flowers has been used to treat intestinal disorders and inflammation(Viney1996),constipation, cough, expectorant (Karousou and Deirmentzoglou, 2011).
Matricaria camomile / Matricaria recutita	(+)	-	sore throat (Viney,1996; Karousou and Deirmentzoglou, 2011).stomach ache(Viney, 1996)), inflamed eyes(Viney, 1996), ear ache, diarrhoea, dyspepsia, spasmolytic, allergy, calmative, dizziness, headache, insomnia, migraine, eye pains, common cold, cough, antiseptic, sanative(Karousou and Deirmentzoglou, 2011).
Melissa officinalis	(+) cultivated	-	cardiotonic, hypertension, tacycardia, antiemetic, colic, dyspepsia, stomach tonic, anti-aging, brain stimulant, calmative, depression, headache, migraine, nervous tonic (Karousou and Deirmentzoglou, 2011).
Micromeria fruticosa	(-)	*M.nervosa, M. myrtifolia, M. microphylla*	
Medicago sativa	(+)	-	
Mentha piperita	(+)cultivated	-	hypotension, igmoritis, colitis, diarrhoea, dyspepsia, liver disorders, migraine, nervous tonic, bad breath, common cold, dysmenorrhoea, rheumatisms, aphrodisiac, tonic(Karousou and Deirmentzoglou, 2011).
Matricaria aurea	(+)	-	
Marrubium vulgare	(+)	-	tea was once popular remedy for coughs and colds (Viney, 1996).
Nasturtium officinale	(+)	-	used to alleviate toothache (Viney, 1996).
Nigella sativa	(+)	-	
Origanum syriacum	(+)	*O. marjorana , O. dictamnus , O. dubium*	liver disorders, headaches, neuralgia, antiseptic, sanative, aphrodisiac,tonic, diarrhoea, dyspepsia, gall disorders, stomach ache, influenza, toothache, asthma , bronchitis, common cold, cough, arthritis (Karousou and Deirmentzoglou, 2011).

Prunus dulcis	(+)	-	oil as emolient and laxative (Viney, 1996).
Pistacia lentiscus	(+)	-	halitosis,resin used for dentistry (Viney, 1996).
Plantago asiatica	(-)	*P.lanceolata*	sores and injuries, respiratory ailments (Viney, 1996).
Prunus mahaleb	(-)	*P.dulcis, P.domestica*	
Pimpinella anisum	(+)	-	dyspepsia, flatulence, intestinal disorders, stomach disorders, whooping cough, bronchitis, cough, expectorant, diuretic (Karousou and Deirmentzoglou, 2011).
Passiflora incarnata	(-)	*P.caerula*	sedative (Viney, 1996).
Petroselinum crispum	(+)	-	blood circulation stimulant, anaemic, antiinflammatory, tonic (Karousou and Deirmentzoglou, 2011).traditional remedy for gallstones (b)
Punica granatum	(+)	-	preparations from tanin-rich bark were used to expel internal parasites (Viney, 1996).
Plantago major	(+)	-	igmoritis, diarrhoea (Karousou and Deirmentzoglou, 2011).
Pelargonium graveolens	(+)cultivated	-	hypertension, diabetes, diarrhoea, dyspepsia, stomach ache, cholesterol, oestrogen action, insomnia, asthma, haemostatic, tonic (Karousou and Deirmentzoglou, 2011).
Rubus ideus	(-)	*R. sanctus*	used to treat bleeding, ulcers, diarrhoea (Viney, 1996).
Rumex crispus	(-)	*R.cyprius, R. bucepalophorus, R.conglomeratus, R.pulcher, R. dentatus*	
Rosmarinus officinalis	(+)cultivated	-	cardiotonic, hypertension, diabetes, diarrhoea, dyspepsia, brain stimulant, calmative, concentration, headache, insomnia, memory stimulant, migraine, gingivitis, asthma, common cold, diuretic, tonic, optical acuteness, detoxification, overstrain(Karousou and Deirmentzoglou, 2011).
Ranunculus ficaria	(+)	-	
Ricinus communis	(+)	-	oil is a powerful purgative, the seeds contain ricin; one of the most toxic natural substances (Viney, 1996).
Ruta graveolens	(-)	*R. chalepensis*	used in traditional medicine (Viney, 1996).
Raphanus sativus	(+)	-	

Salvia fruticosa	(+)cultivated	-	hypotension, diabetes, oestrogen action, diorrhoea, dyspepsia, spasmolytic, anti-aging, anti-perspirant, brain stimulant, depression, nervous tonic, aphtae, gingivitis, dysmenorrhoea, antiseptic, diuretic(Karousou and Deirmentzoglou, 2011).
Stellaria media	(+)		
Sesamum indicum	(+)		
Solanum tuberosum	(+) cultivated	*Solanum nigrum*	berries used as a sedative and painkiller but taken in any quantity all parts are dangerously toxic (Viney, 1996).
		Solanum villosum	paste made from the berries was traditionally used for children's stomach and teething pains, although the plant is toxic (Viney, 1996).
Symphytum officinale	(-)imported	-	phlebitis, constipation, gastric ulcer, osteoporosis, bronchitis, sanative (Karousou and Deirmentzoglou, 2011).
Silybum marianum	(+)	-	
Sambucus nigra	(+)	-	hypotension, constipation, spasmolytic, stomach disorders, anaemia, influenza, diaphoretic, depression, eye pains, cough, common cold, arthritis, rheumatisms, diuretic, anti-inflammatory, detoxification, febrifuge(Karousou and Deirmentzoglou, 2011).
Thymus vulgaris	(+)cultivated	*T. creticum, T. scordium, T. divariticum, T.cyprium, T.capitatus*	hypotension, dyspepsia, diarrhoea, anaemia, immune system stimulant, influenza, antiaging, brain stimulant, calmative, depression, memory stimulant, migraine, asthma, common cold, cough, antifungal, antiseptic (Karousou and Deirmentzoglou, 2011).
Taraxacum officinale	(+)	-	diabetes, dyspepsia, gall disorders, liver disorders, obesity, cholesterol, rheumatisms, diuretic (Karousou and Deirmentzoglou, 2011).
Teucrium chamaedrys	(-)	*T. creticum, T. scordium, T. divariticum, T.cyprium*	
Tilia sp.	(+)cultivated	-	colic, constipation, calmative, cough (Karousou and Deirmentzoglou, 2011).
Tanacetum vulgare	(-) imported	-	influenza, calmative, depression, headache, insomnia, migraine, common cold, arthritis(Karousou and

			Deirmentzoglou, 2011).
Urtica dioica	(+)	-	haemorrhoids, phlebitis, diabetes, constipation, gall disorders, anaemia, allergy, bronchitis, dysmenorrhoea, impotence, arthritis, rheumatisms,haemostatic, hair loss, diuretic, incontinence, blood purification (Karousou and Deirmentzoglou, 2011).
		U. pilulifera	mouth ulcers, nose bleeding, rheumatism (Viney, 1996).
Ulmus minor	(-)	*Ulmus canescens*	
Verbena officinalis	(+)	-	bruised leaves applied to the septic wounds, infusions for fevers, stomach troubles (Viney, 1996).
Vitex agnus-castus	(+)	-	stomach ache, eye troubles (Viney, 1996).
Ziziphus jojoba	(-)	*Z.lotus*	diarrhoea and skin troubles (Viney, 1996).
Quercus sp		*Q. infectoria, Q.coccifera*	(Viney, 1996).

Key:

(+): Species grown wildly in Cyprus

(-): Species not wildly grown in Cyprus

58 species are grown or cultivated in Cyprus. 17 species are not grown in Cyprus but imported or has another plant growing from the same species.

3.5. Questionnaire on the Availability of Herbal Medicine/ Product Recommended to Pregnant Women in the Community Pharmacies of the TRNC

Pharmacies in the TRNC, in the four districts of Nicosia, Kyrenia, Güzelyurt and Famagusta were visited during the months of November and December 2018 and a questionnaire of 5 questions (Table 19) was introduced. Out of 263 community pharmacies 116 responded and the data was collected.

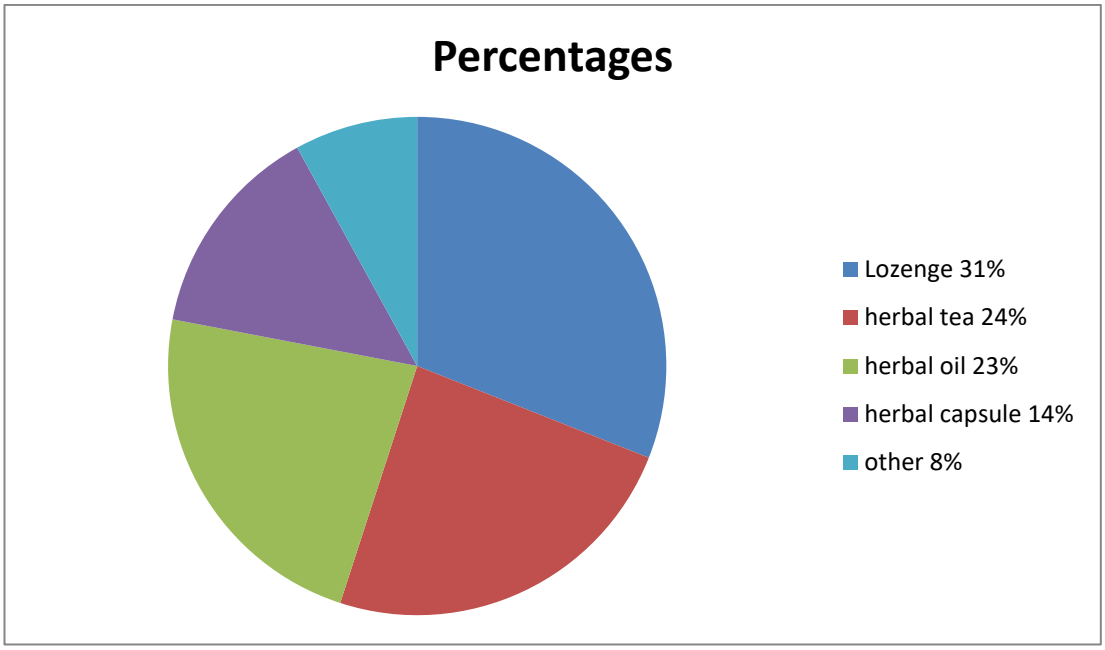
Table 19. Questionnaire on herbal medicine/ products available and recommended to pregnant women in the TRNC pharmacies

1.	Is any kind of herbal product (medicinal teas, medicinal oils or medicinal herbal products) which you recommend to pregnant women available in your pharmacy? ☐yes ☐no
2.	If there is please, put a tick on the pharmaceutical form of the product.(more than one product could be chosen). ☐medicinal tea ☐medicinal oil ☐pastille/lozenge ☐capsule ☐tablet ☐other……
3.	I f you recommend medicinal teas please choose one or more of the options below. ☐nursing tea ☐antiflatulence tea ☐other
4.	What are the medicinal oils that you recommend to pregnant women? ☐almond oil ☐jojoba oil ☐stretch mark oils ☐peppermint oil ☐lavender oil ☐other……..
5.	What is the medicinal herbal product that you recommend the most and get a positive feed-back? Pastille/lozenge……. Capsule……. Tablet…… Syrup……. Drops(Solution)……. Other…….
If you do not have any herbal product in your pharmacy; 6.For how many years have you been working as a community pharmacist? …….. 7.During this time , were any herbal product requested from you? ☐yes ☐no	

Of 116 community pharmacies 101 answered stating that they have herbal medicine/products available in their pharmacies. 4 answered not to have any herbal medicine/products but later in the questionnaire stated having at least almond oil. 11 answered not to have any herbal medicine/product in their pharmacies available. Those pharmacists were either very recently graduated (having a mean working years of 2 months) or had approximately 36,8 years of mean working years in the community pharmacies.

The pharmaceutical form mostly recommended was herbal lozenges(n=76), followed by herbal tea(n=60), herbal oils(n=57), herbal capsule(n=36), other(n=20) in descending order. Other pharmaceutical forms include hair colour kit(n=9), soap(1), deodorant(n=4), shampoo(n=2),cosmetics(n=2), throat spray(1), parfum(n=1).Figure 1. shows the percentages of the pharmaceutical forms, recommended by the Turkish pharmacists, in a pie chart.

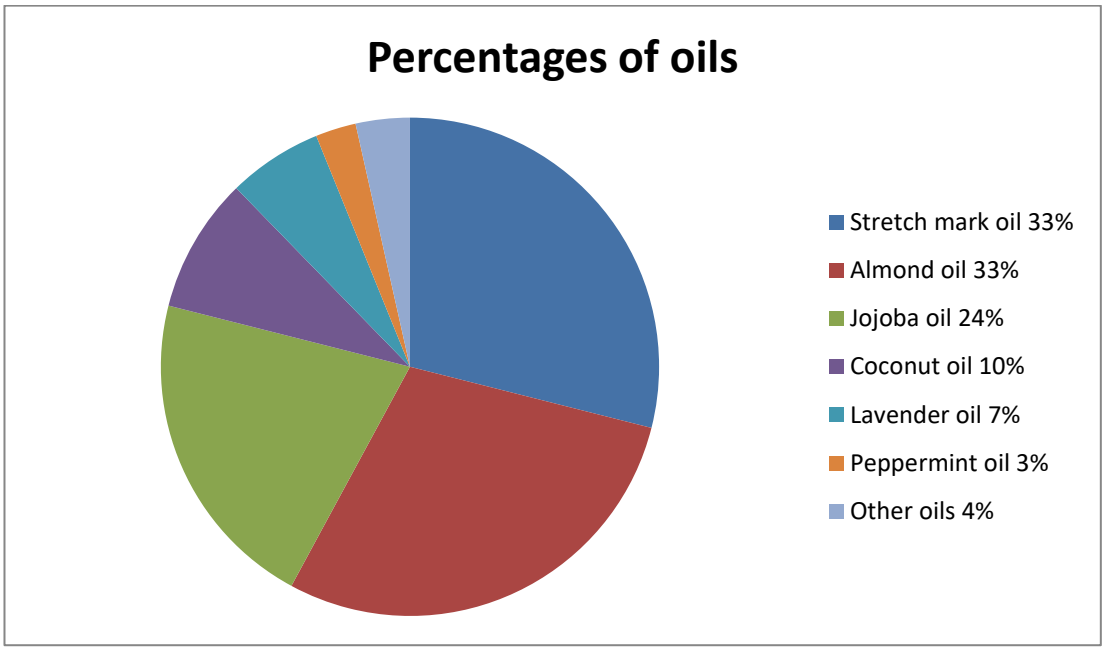
Figure 1. The percentages of the herbal pharmaceutical forms.



Antiflatulence medicinal teas were the most recommended (n=67), followed by nursing teas (n=61).Relaxing teas (n=2) were also recommended.

The most recommended medicinal oil was stretch mark oil (n=84), followed by sweet almond oil (n=82), jojoba oil (n=24), coconut oil (n=24), lavender oil (n=18), peppermint oil (n=8).Other medicinal oils recommended to pregnant women are as follows; olive oil (n=1), baby oil (n=1), *Hypericum perforatum* oil (n=1), pine oil (n=1), oregano oil (n=1), thyme oil (n=1), clove oil(n=1), grapeseed oil(n=1), wallnut oil(n=1), strawberry+almond oil(n=1), wheat germ oil(n=1), eucalyptus oil(n=2).The percentage of medicinal oils recommended by Turkish pharmacists to pregnant women are shown in Figure 2.

Figure 2. Percentage of medicinal oils recommended by Turkish pharmacists to pregnant women.

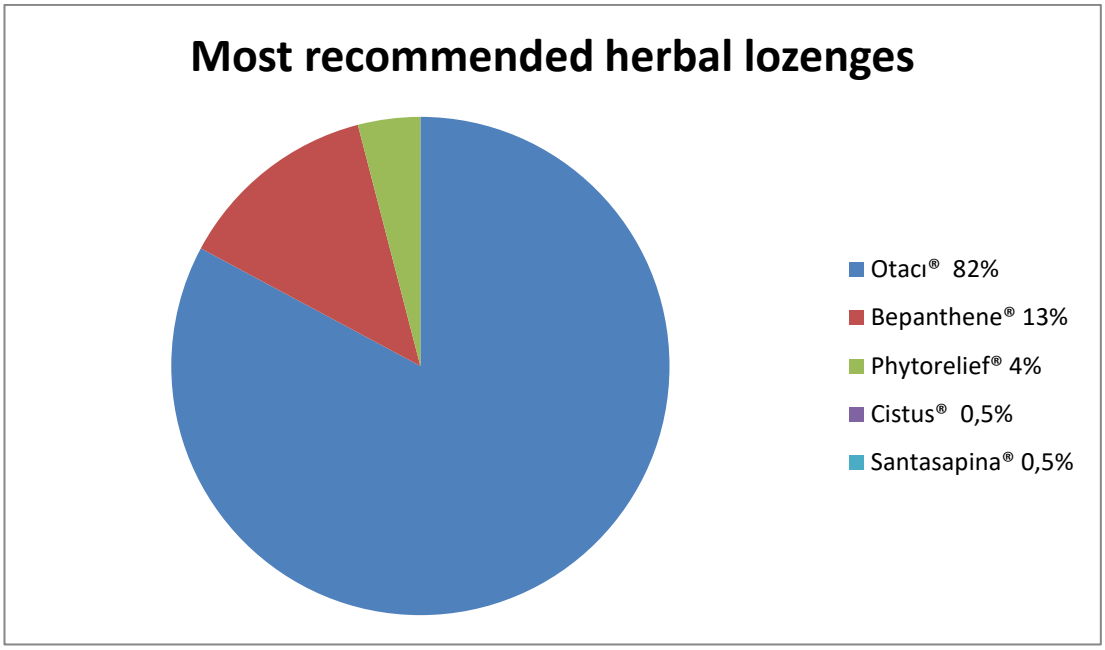


As for the last question, the pharmacists included in their answers conventional medicines too.This could be simply a misunderstanding of the question or an indication for a need in herbal medicine/ product education; which should be addressed immediately.

The results are as follows;

The most recommended herbal lozenge was a brand called Otacı® (n=65), followed by Bepanthene® (a conventional medicine) (n=10), Phytorelief®(n=3), Cistus®(n=1) and Santasapina®(n=1). Figure 3. shows the most recommended herbal lozenges by the Turkish pharmacists to the pregnant women.

Figure 3. The most recommended herbal lozenges



The most recommended caspule formed medicine was Imom® (n=25); an omega-3 containing vitamin supplement rather than a herbal medicine. The rest of the results is as follows; Prenatal® capsules of Nurse Harvey's (n=2) is again a vitamin supplement rather than a herbal medicine, Fenugreek capsules (n=2), Fennel capsules (n=1), Milk thistle capsules (n=1), Bee&You® (bee products) (n=1), Echinacea capsules (n=1), Isoflavone capsules (n=1), Omega 3 capsules of Royal Green® brand (a vitamin supplement) (n=1).

The most recommended tablet form was Pregnacare® tablets (n=23) again a vitamin supplement rather than a herbal medicine followed by another vitamin supplement Pregnacare® plus (n=14). The rest of the results is as follows: Hair complex tablets (n=1), *Soja hispida* tablets (n=1), Folic acid (n=1), Natracalm® tablets (n=2). Panadol® tablets(n=14); though a conventional medicine, was stated to be recommended to pregnant women in Cypriot pharmacies.

The most recommended herbal medicine in syrup form was Passiflora® sirop (n=3); followed by the vitamin supplement Pregnacare® liquid. In this part, the pharmacists stated that they recommended conventional medicines like Gaviscon® liquid (n=1), Bricanyl® sirop (n=1) and Ferplex® fol solution (n=1).

The most recommended herbal medicine in drop form was Zinco® drops (n=3) followed by Coldmix® drops (n=2), Dormeasan® drops (n=1), Vitamin D3 drops (n=1), Eucalyptus oil drops (n=1).

Herbal throat spray containing propolis (n=1) and Immumax® throat spray (n=1) and Vicks® inhaler (n=1) were also recommend.

3.6. Safety Aspects Regarding Certain Herbal Medicines

3.6.1.*Chamomile recutita* – Chamomile

Chamomile (*Chamomile recutita*) due to the reports as being uterine stimulant, should be used in caution in large doses (Pinn and Pallett, 2002).

3.6.2.Chinese Herbal Medicine

At least one cohort study has shown a risk of congenital malformations for the use of Chinese Herbal Medicine in humans (Wiebrecht et *al*., 2014). Coptidis rhizoma (Huang lian) was associated with increased malformations of the nervous system and the external genital system. The formula An-Tai-Yin led to increased malformations of the muscoskeletal and connective tissue and the eye. The children, whose mothers had taken Coptidis rhizoma during pregnancy, the same authors were able to observe an increase in cancer cases particularly of the CNS, after a mean follow-up period of 14.9 years(Wiebrecht et *al*., 2014).

3.6.3. *Echinacea purpurea* – Echinacea

Echinacea is not recommended by Commission E beyond 8 weeks' gestation (Tsui et *al*., 2001). The use of echinacea more than 8 weeks can lead to hepatotoxicity (Tiran, 2003).In 2016, Heitmann et *al*. found no risk of malformations or adverse pregnancy outcomes after the use of echinacea in pregnancy (Heitmann et *al*., 2016).

3.6.4. *Ginkgo biloba* – Gingko

Ginkgo biloba possibly interacts with anticoagulants and antiplatelet agents upseting the balance of coagulation mechanism (Tiran, 2003).

3.6.5.*Glycyrrhiza glabra* – Liqorice

There are studies showing ‘ heavy intake’ lowering gestation periods and impairing cognitive development in the children (MacLennan and Koog, 2014).

A Korean study reported a marked increase in the rate of stillbirths where expectant mother was taking a medicine containing liqorice (Choi et *al*., 2013).

3.6.6.*Hydrastis canadensis* – Goldenseal

Goldenseal possesses uterine- stimulating effect and is listed as one of the common herbs to be avoided during pregnancy (Conover, 2003; Tsui et *al*., 2001).

3.6.7. *Hypericum perforatum* – St. John’s wort

There are two studies with the prevalance of hypospadias is higher than expected but this deserves further studies due to the limitations in these studies (Kolding et *al*., 2015).

Hypericum perforatum i may affect the metabolism of other drugs because it is a potent inducer of CYP isoenzymes and P-glycoproteins. *Hypericum perforatum* may potentially induce changes in plasma concentrations of antidepressants prescribed together (Kolding et *al*., 2015).

Infants exposed in utero to St. John’s Wort did similar to those of the offspring of either the healthy controls ot the disease comparator groups (Moretti et *al*., 2009).

In a mother who used St. John’s Wort for depression during pregnancy, late onset thrombocytopenia was reported (Tsui et *al*., 2001).

Mother’s use of St. John’s wort has been shown to lead to ‘ therapeutic blood levels’ in breastfeeding infants (Ernst and Watson, 2012).

3.6.8.Korean Herbal Medicine

Atracylodis rhizoma white, Glycyyrrhizae radix, Eucommiae cortex, Dioscoreae rhizoma, Paeoniae radix alba, Angelicae gigantis radix, Amomi fructus are considered safe with regard to fetal growth and birth weight. Using these herbs

below reported maximum daily dose result in side effects only rarely to pregnant women and foetus (Jo et *al*., 2016).

3.6.9.Other Plants

Hypoxia, renal failure and seizures occurred in an infant whose mother had used a combination of blue (*Caulophyllum thalictoides*) and black (C*imifuga rasemosa*) cohosh during pregnancy (Tsui et *al*., 2001).

Herbs such as laxative *Rumex crispus* and antihelmintic *Arthemisia absinthium* are contraindicated in pregnancy and lactation (Bowman et *al*., 2014).

A concern rose regarding the safety of herbal medicine contamination by toxic substances, such as lead and pesticides. A study from Taiwan found that women who consumed traditional Chinese herbs during pregnancy and lactation had higher concentrations of lead in their breastmilk (Tang et *al*., 2016).

In a study,chamomile, peppermint and green tea use in the last two trimesters of pregnancy was examined and no association was found regarding prematurity (Mousally and Berard, 2010). Exposure to flax during last two trimesters of pregnancy increased the risk of preterm birth (Mousally and Berard, 2010).

In another study, higher risk of preterm delivery, lower birth weight and lower length of the newborn was resulted by regular chamomile consumption (Trabace et *al*., 2015). Shorter gestational age was caused by regular use of fennel and a shorter gestational age and a smaller circumference of the newborn's skull was caused by ginger intake (Trabace et *al*., 2015).

Intake of regular, green and herbal tea was evaluated in the first trimester and the authors concluded that adverse birth outcomes were not associated with pesticide concentrations determined by tea intake in the first trimester(Colapinto *al*., 2015).

3.6.10.*Passiflora incarnata* – Passion flower

In one study, complications including meconium stained amniotic fluid (MSAF), premature rapture of membranes (PROM), meconium aspiration syndrome (MAS), and persistent pulmonary hypertension of newborn (PPHN) were observed following *Passiflora incarnata* treatment in pregnancy (Öztürk and Kalaycı, 2017).

3.6.11.*Rubus ideus* – Raspberry leaf tea

There is a weak evidence for safety and efficacy in pregnancy . The fact that is has been traditionally used for decades is not evidence for safety and efficacy (Holst et *al*., 2009; Kennedy et *al*., 2016).

3.6.12.*Zingiber officinale* – Ginger

One case study states that; due to ginger's anticoagulant activity ,women taking anticoagulant therapy such as heparin or warfarin, non-steroidal antiinflamatories, aspirin or other drugs or herbs which have a similar action should avoid ginger completely (Tiran, 2012).

Any woman with co-existing heatburn should avoid ginger because of its stomach irritant property (Tiran, 2012).

Ginger is contraindicated in people with a story of gallstones because of suggested cholagoguic action (Tiran, 2012).

If dried ginger root is chewn, it has to be properly masticated, ginger can cause intestinal blockage as a result of poor chewing (Tiran, 2012).

Women suffering of dizziness of pregnancy as well as those on antihypertansive medication, should avoid taking ginger as ginger has a hypotensive effect on the cardiovascular system (Tiran, 2012).

Due to the possibility of impairment of foetal development, Finland is placing a warning on the labels of all ginger medicinal products as being unsafe for use in pregnancy (Tiran, 2012).

It is unhelpful in women who feel hot, who are constantly thirsty red faced or irritable because of its shown weak cholinergic effect (Tiran, 2012).

Ginger doses of more than 10 g per day may produce uterine stimulating effects which could adversely affect the pregnancy (Ding et *al*., 2013). High doses of ginger may also aggrevate pre-existing conditions, such as, cholelithiasis, or contribute to cardiac arrythmia, CNS depression and heatburn (Ding et *al*., 2013).

Ginger also has the potential to interact with other medications such as dimenhydrinate (Dramamine®), hypoglycaemic agents of insulin as some constituents of ginger could theoretically potentiate hypoglycaemic effect of these medications; garlic,ginseng or ginkgo, aspirin, heparin or warfarin as ginger is likely to inhibit tromboxane synthetase at high doses with long-term consumpiton ((Ding et *al*., 2013; Tiran,2003; Tsui et *al*., 2001).

Ginger may also increase the absorption of other orally administered drugs and may antagonize the activity of proton pomp inhibitors and H2 blockers by increasing the production of gastric acid (Ding et *al*., 2013).

There are concerns about the mutagenic activity of a constituent, 6-gingerol (Tiran,2003; Westfall, 2004).

Ginger can increase the possibility of post-partum haemorrage therefore is contraindicated in labour (Westfall, 2004).

To summarize all; ginger possesses possible haemorragic, mutagenic,antagonistic, tromboxane synthetase inhibiting,increasing hypoglycaemic effect of medicines, uterine-stimulating,impairing foetal development,hypotensive, cholagoguic, stomach irritant and anticoagulant activities thus, should be used with caution in pregnancy.

4.DISCUSSION and RESULT

Women are using complementary and alternative medicine (CAM) and especially herbal products, increasingly. These products are regarded as 'natural' and therefore considered to be safe in pregnancy resulting in women not informing their health care professionals (HCP) of their use of such products.Even if they do, there is an urgent need for more education among the HCPs and the use of herbal medicines should be evidence-based rather than tradition. There are studies trying to establish safety and efficacy of herbal medicine but the number is small and some of these studies have inadequecies within themselves, so more studies are needed to be done to establish the safety and efficacy of herbal medicine. The adverse/side effects of a certain herbal medicine may be dose dependent in pregnancy and the stage of pregnancy on which the herbal medicine is taken may also effect the adverse/side effects. In future studies, which would further investigate safety and efficacy of a herbal medicine, dose-adverse/side effects relationships should also be investigated as well as safety and efficacy of the herbal medicine.

In a study, herbal medicines used in pregnancy were classified according to their safety (Kennedy et *al*., 2016).In this study, it was found that, most frequently used herbal medicines, actually contraindicated for pregnancy,were *Vaccinium vitis-idaea* (cowberry), *Levisticum officinale* (Lovage) and *Leonurus cardiaca* (Motherwort). The herbal medicines classified as safe for use in pregnancy were *Zingiber officinale* (ginger), *Vaccinium macrocarpon* (cranberry) and *Mentha piperita* (peppermint). The herbal medicines which were used in pregnancy and classified 'to be used with caution in pregnancy' were *Valeriana officinalis* (valerian), *Rubus idaeus* (raspberry) and *Rosa canina* (dog rose) (Kennedy et *al*., 2016).

While the use of herbal medicine has increased among pregnant women in the World, in Cyprus, pregnant women are more aware of the teratogenicity of such product and do not use herbal medicine unless recommended by their doctors. Although this is a subject which need more research to identify the herbal product used traditionally among pregnant women in Cyprus, it is well-known that linden, elder flower teas are commonly used in treatment of upper respiratory tract infections.On the other hand, Turkish Cypriot pharmacists has a small number of

herbal medication in their pharmacies and they are reluctant to recommend such herbal medicines to pregnant women unless prescribed by a doctor.According to our questionnaire result herbal lozenges are the most recommended pharmaceutical form and the most recommended brand of herbal lozenge is Otacı®. The most recommended herbal oils are the stretch mark oil (33%) and almond oil (33%). The most recommended teas were antiflatulence teas and nursing teas respectively.

For future herbal medicine use among pregnant women, more science-based studies should be carried and the results should be shared not only with the health care professionals, like the doctors and the pharmacists, but the public as well. There is one more point to consider that; while the Turkish pharmacists are less eager to recommend herbal product to pregnant women in Cyprus unless prescribed by a doctor, this is not the case with the 'aktar's (seller of medicinal herbs in Turkish tradition) and they are very generous in recommending and providing information (evidence-based?, educated herbalist?) regarding herbs medicinal use not only to the general public but to pregnant women as well.This is an issue threatening public health including the pregnant women and serious regulations are needed to be made by the governing bodies.

5.REFERENCES

Ali-Shtayeh MS, Jamous RM, Jamous RM. Plants used during pregnancy, childbirth, postpartum and infant care in Palestine. Complementary Therapies in Clinical Practice. 21(2015) 84-93.

Al-Ramahi, Jaradat N, Adawi D. Use of herbal medicines during pregnancy in a group of Palestinian women. Journal of Ethnopharmacology. 150(2013) 79-84.

Bastard J, Tiran D. Aromatherapy and massage for antenatal anxiety: Its effecton the foetus. Complementary Therapies in Clinical Practice. 12(2006) 48-54.

Bishop JL, Northstone K, Green JR Thompson EA. The use of complementary and alternative medicine in pregnancy: Data from Avon Longitudinal Study for Parents and Children (ALSPAC). Complementary Therapies in Medicine. 19(2011) 303-310.

Bowe S, Adams J, LuiCW, Sibbritt D, Broom A. A longitudinal analysis of self-prescribed complementary and alternative medicine use by a national representative sample of 19783 Australian women,2006-2010. Complementary Therapies in Medicine. 23(2015) 699-704.

Bowman D, Steel A, Adams J, Sibbritt D, Broom A. The characteristics of women using different forms of botanical medicine to manage pregnancy-related health conditions. A preliminary cross-sectional analysis. Advances in Integrative Medicine. 1(2014) 138-143.

Broussard C, Louik C, Honein MA, Mitchell AA. Herbal use before and during pregnancy. Am J Obstet Gynecol. (2010) 443e1-443e6.

Burns E, Blamey J, Ersser SJ, Barneston L, Lloyd AJ. An investigation into the use of aromatherapy in intraspartum midwifery practice. Journal of Alternative and Complementary Medicine. 2(2000)141-7.

Burns E, Blamey J, Ersser SJ, Barneston L, Lloyd AJ. The use of aromatherapy in intrapartum midwifery practice: an observational study. Complementary Therapies in Nursing & Midwifery. 6(2000) 33-34.

Chen PJ, Chou CC, Yang L, Tsai YL, Chang YC, Liaw JJ. Effects of aromatherapy massage on pregnant women's stress and immune function: A longitudinal, prospective, randomized controlled trial. J Alternative Complement Med. (2017) Oct;23(10) 778-786.

Choi JS, Han JY, Ahn HK, Ryu HM, Kim MY. Fetal and neonatal outcomes in womenn reporting ingestion of licorice (*Glycyrrhiza uralensis*) during pregnancy. Planta Med. 79(2013) 79-97.

Chuang CH, Chang PJ, Hseih WS, Tsai JJ, Lin SJ, Chen PC. Chinese herbal medicine use in Taiwan during pregnancy and post-partum period : a population-based cohort study.International Journal of Nursing Studies. 46(2009) 787-795.

Chung S, Wu CH. Trend and pattern of herb and supplement use among pregnant women in the United States: findings from the 2002, 2007 and 2012 US National Interview Surveys. American Journal of Obtetrics&Gynecology Feb (2017) 189-190.

Colapinto CK,Arbuckle TE, Dubois L, Fraser W. Tea consumption in pregnancy? Environmental Research 142(2015)77-83.

Conover EA. Herbal agents and over-the-counter medications in pregnancy. Best Practice&Research Clinical Endocrinology and Metabolism 17(2003) 237-251.

Cuzzolin L, Zanconato G, Ventrella D, Benoni G. Use of herbal products among 199 Italian women during pregnancy. European Journal of Obstetrics & Gynaecology and Reproductive Biology. 150(2010) 102-108.

Damase-Michel C, Vie C, Lacroix I, lapeyre-Mestre M, Montastruc JL. Drug counselling in pregnancy: an opinion survey of French community pharmacists. Pharmacoepidemiology and Drug Safety. 13(2004) 711-715.

Ding M, Leach M, Bradley H. The effectiveness and safety of ginger for pregnancy induced nausea and vomiting: a systematic review. Women and Birth 26(2013) e26-e30.

Ernst E. Herbal medicinal products in pregnancy ? Phytomedicine 9: 352-354,2002.

Ernst E, Watson LK. Midwives' use of complementary/alternative treatments. Midwifery 28(2012)772-777.

Fowler P, Wall M. COSHH and CHIPS : ensuring the safety of aromatherapy. Complementary Therapies in Medicine 5(1997)112-115.

Frawley J, Adams J, Steel A, Broom A, Gallois C, Sibbritt D. Women's use and self-prescription of herbal medicine during pregnancy:An examination of 1835 pregnant women. Women's Health Issues. (2015) 25(4) 396-402.

Freyer A. Drug prescribing challenges during pregnancy. Obstetrics,Gynwcology & Reproductive Medicine 18(2008)180-186.

Gibson PS,Powrie R, Star J.Herbal and alternative medicine use during pregnancy: a cross-sectional survey.Obstetrics&Gynecology(2001) 97(4) s44-s45.

Glover DD, Amonkar M, Rybeck BF, Tracy TS. Prescription, over-the-counter, and herbal medicine use in rural obstetric populationç American Journal of Obstetrics & Gynecology.188(4) (2003) 1039-1045.

Gregoretti B, stebel M, Candussio L, Crivellato E, Bartoli F, Decorti G. Toxicity of Hypericum perforatum(St. John's Wort) administered during pregnancy and lactation in rats. Toxicology and Applied pharmacology 200(2004) 201-205.

Halıcıoğlu O, Astarcıoğlu G,Yaprak I,Aydınoğlu H. Toxicity of Salvia officinalisin a newborn and a child: an alarming report. Pediatric Neurology 45(2011) 259-260.

Hall HG, Griffiths DL, McKenna LG. The use of complementary and alternative medicine by pregnant women: A literature review. Midwifery 27 (2011) 817-824.

Hall HG, McKenna LG, Griffiths DL. Complementary and alternative medicine for induction of labour. Women and Birth. 25(2012) 142-148.

Hall HG, McKenna LG, Griffiths DL. Midwives' support for complementary and alternative medicine: A literature review. Women & Birth 25(2012) 4-1

Heitmann K , Havnen GC ,Holst L , Nordeng H . Pregnancy outcomes after prenatal exposure to echinacea : the Norwegian mother and child cohort stud. Eur J Pharmacol (2016) 72:623-630.

Holst L, Haavik S, Nordeng H. Raspberry leaf-Should it be recommended to pregnant women? Complementary Therapies in Clinical Practice 15(2009) 204-208.

Holst L, Wright D, Haavik S, Nordeng H. Safety and efficacy of herbal remedies in obstetrics-review and clincal implications. Midwifery 27(2011)80-86.

Igarashi T. Physical and psychological effects of aromatherapy inhalation on pregnant women: a randomized controlled trial. The Journal of Alternative and Complementary Medicine 19(2013) 805-810.

Jo J,Lee SH,Lee JM, Lee H,Kwack SJ,Kim DI. Use and safety of Korean herbal medicine during pregnancy:A Koreaan medicine literature review. European Journal of Integrative Medicine 8(2016) 4-11.

Kennedy DA, Lupatelli A, Koren G, Nordeng H . Herbal medicine use in pregnancy:results of a multinational study. BMC Complementary and alternative medicine (2013) 13:355.

Kennedy DA, Lupatelli A, Koren G, Nordeng H .Safety classification of herbal medicines used in pregnancy in a multinational study . BMC Complementary and alternative medicine (2016) 16:102.

Khresheh R. Strategies used by Jordanian women to alleviate heatburn during pregnancy. Midwifery 27(2011)603-606.

Kıssal A, Çevik Ü, Ertürk DB. Use of herbal product among pregnant women in Turkey. Complementary Therapies in Medicine 30(2017)54-60.

Kim M, Yun Y, Kim KS, Choi I. Three cases of atopic dermatitis in pregnant women successfully treated with Korean medicine. Complementary Therapies in Medicine. 21(2013) 512-516.

Koç Z, Topatan S, Sağlam Z. Use of and attitudes toward complementary and alternative medicine among midwives in Turkey.European Journal of Obstetrics& Gynecology and Reproductive Biology 160(2012)131-136.

Koç Z,Sağlam Z, Toptam S. Determination of the usage of complemantary and alternative medicine among pregnant women in northern region of Turkey. Collegian xxx(2016)xxx-xxx.

Kolding L, Pedersen LH , Henriksen TB , Olsen J , Grzeskowiale LE. Hypericum perforatum use during pregnancy and pregnancy outcome . Reproductive Toxicology 58(2015) 234-237.

Louik C, Gardiner P, Kelley K, Mitchell AA. Use of herbal treatments in pregnancy. Am J Obstet Gynecol (2010) 439.e1-439.e10.

MacLennan E, Koog YH. Are-analysis of studies regarding the use of Glycyrrhiza spp. İn women during pregnancy. Journal of Herbal Medicine 4(2014)106-110.

Malan DF, Neuba DFR. Traditional practices and medicinal plants use during pregnancy by Anyi-Ndenye women (Eastern Cote D'Ivoire). African Journal of Reproductive Health March(2011);15(1):85.

Mitchell M. Women's use of complementary and alternative medicine in pregnancy: A search for holistic wellbeing. Women & Birth. 27(2014)276-280.

Moretti ME, Maxson A, Hanna F, Koren G. Evaluating the safety of St. John's Wort in human pregnancy. Reproductive Toxicology 28(2009) 96-99.

Mousally K, Berard A. Exposure to herbal products during pregnancy and the risk of preterm birth. Letters to the Editor/ European Journal Of Obstetrics& Gynaecology and Reproductive Biology 150(2010)102-108.

Mousley S. Audit of an aromatherapy service in a maternity unit. Complemamtary Therapies in Clinical Practice 11(2005) 205-210.

Münstedt K, Brenken A, Kalder M. Clinical indications and perceived effectiveness of complementary and alternative medicine in departments of obtetrics in Germany: A questionnaire study. European Journal of Obstetrics & Gynecology and Reproductive Biology 146(2009)50-54.

Nordeng H,Bayne K, Havnen C,Paulsen BS. Use of herbal drugs during pregnancy among 600 Norwegian women in relation to concurrent use of conventional drugs and pregnancy outcome.Complementary Therapies in Clinical Practice 17(2011) 147-151.

Odalovic M, Milankovic S, Holst L, Nordeng H, Heitmann K, Tasic L. Pharmacists counselling of pregnant women:web-based,comperative study between Serbia and Norway.Midwifery. 40(2016) 79-86.

Orief YI, Farghaly NF, Ibrahim MIA. Use of herbal medicines among pregnant women attending family centres in Alexandria. Middle East Fertility Society Journal 19(2014) 42-50.

Öztürk Z, Kalaycı ÇÇ. Pregnancy outcomes in psycgiatric patients treated with Passiflora incarnata. Complementary Therapies in Medicine 36(2018) 30-32.

Pallivalipila AR, Stewart D, Shetty A, Pande B, Singh R, McLay J. Complementary and alternative medicine use in early pregnancy. European Journal of Obstetrics& Gyneacology & Reproductive Biology. 181(2014)251-255.

Pasha H, Behmanesh F, Mohsenzadeh F, Hajahmadi M, Moghadamnia AA. Study of the effect of mint oil on nausea and vomiting during pregnancy. Iranian Red Crescent Medical Journal 14(2012)727-30.

Pinn G, Pallett L. Herbal medicine in pregnancy. Complementary Therapies in Nursing & Midwifery. 8(2002)77-80.

Samavati R, Ducza E, Hajagos-Toth J, Gaspar R. Herbal laxatives and antiemetics in pregnancy.Reproductive toxicology72(2017) 153-158.

Sibbritt DW, Catling CJ, Adams J, Shaw AJ,Homer CSE. The self-prescribed use of aromatherapy oils by pregnant women. Women and Birth 27(2014) 41-45.

Stapleton H, The use of herbal medicine in pregnancy and labour. Part 1: an overview of current practice. Complementary Therapies in Nursing & Midwifery 1 (1995) 148-153.

Tang L, Lee AH, Binns CW, Hui YV, Yau KKW. Consumption of Chinese herbal medicines during pregnancy and postpartum: A prospective cohort study in China. Midwifery 34(2016) 205-210.

Tesch B. Herbs commonly used by women: An evidence-based review. Am J Obstet Gynecol 5(2003)s44-s55.

Tiran D, Chummun H. Complementary therapes to reduce physiological stress in pregnancy. Complementary Therapies in Nursing & Midwifery 10(2004)162-167.

Tiran D. Aromatherapy in midwifery:benefits and risks. Complementary Therapies in Nursing & Midwifery 2(1996) 88-92.

Tiran D. Complementary medicine in pregnancy and childbirth in UK.International Congress Series 1287(2006)340-344.

Tiran D. Complementary therapies in pregnancy: Midwives' and obstetricians' appreciation of risk. Complementary Therapies in Clinical Practice 12(2006)126-131.

Tiran D. Ginger to reduce nausea and vomiting during pregnancy: Evidence of effectiveness is not the same as proof of safety. Complementary Therapies in Clinical Practice. 18(2012) 22-25.

Tiran D. The use of herbs by pregnant and childbearing women: a risk-benefit assessment. Complementary Therapies in Nursing & Midwifery 9(2003)176-181.

Towns AM, Andel TV. Wld plants, pregnancy and the food-medicine continuum in the southern regions of Ghana and Benin.

Trabace L, Tucci P, Ciuffreda L, Matteo M, Fortunato F, Campolongo P,Trezza V, Cuoma V. 'Natural' relief of pregnancy-related symptoms and neonatal outcomes: above all do no harm. Journal of Ethnopharmacology. 174(2015) 396-402.

Tsui B, Dennehy CE, Tsourounis C. A survey of dietary supplement use during pregnancy at an academic medical center. Am J Obstet Gynecol 185(2001)433-437.

Varga CA,Veale DJH. Isıhlambezo: Utilization patterns and potential health effects of pregnancy-related traditional herbal medicine. Soc.Sci. Med.(1997) 911-924.

Veale DJH, Furman KI,Oliver DW. South African traditional herbal medicines used during pregnancy and childbirth. Journal of Ethnopharmacology 36(1992)185-191.

Weisner J, Knöss W. Herbal medicinal products in pregnancy- which data are available Reproductive Toxicology 72(2017) 142-152.

Westfall RE. Use of antiemetic herbs in pregnancy: women's choices, and the question of safety and efficacy. Complementary Therapies in Nursing & Midwifery 10(2004)30-36.

HO.Issues and guidelines for herbal medicines. Bull WHO 2004; 82(3)238.

Wiebrecht A, Gaus W,Becker S, Hummelsberger J, Kuhlmann K. Safety aspects of Chinese herbal medicine in pregnancy-re-evaluation of experimental data of two animal studies and the clinical experience. Complementary Therapes in Medicine 22(2014)954-964.

Yavari KP, Safajou F,Shahnazi M,Nazemiyeh H . The effect of lemon inhalation aromatherapy on nausea and vomiting of pregnancy: a double-blind, randomized,controlled clinical trial.Iranıan Red Crescent Medical Journal(2014) 16(3): e14360.

Yazdkhasti M, Pirak A. The effect of aromatherapy with lavender essence on severity of labour pain and duration of labour in primiparous women. Complementary Therapies in Clinical Practice 25(2016) 81-86.

Yemele MD, Telefo PB, Lienou LL, Tagne SR,Fodouop CSP,Goka CS, Lemfack MC,Moundipa FP. Ethnobotanical survey of medicinal plants used for pregnant women's health conditions in Menova division- West Cameroon. Journal of Ethnopharmacology 160(2015)14-31.

Yusof J, Mahdy ZA, Noor RM. Use of complementary and alternative medicine in pregnancy and its impact on obstetric outcome. Complememtary Therapies in Clinical Practice. 25(2016)155-163.

Zagorodnikova K, Lupatelli A,Pokladova M,Nordeng H. Use of herbal medicines during pregnancy by women in Russia. Abstracts/Reproductive Toxicology 60(2016)172-187.

.