

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

PHYSIOLOGICAL AND NUTRITIONAL
IMPLICATIONS OF HERBAL TEA USE

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satisfaction of the requirements for the
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Home Economics

by

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TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iii
ABSTRACT	v
CHAPTER	
1. INTRODUCTION	1
2. REVIEW OF LITERATURE	6
3. METHODOLOGY	7
4. RESULTS AND DISCUSSION	8
5. SUMMARY AND CONCLUSIONS	11
APPENDICES	
A. REFERENCE MANUAL ON THE PHYSIOLOGICAL AND NUTRITIONAL IMPLICATIONS OF HERBAL TEA USE	15
B. EVALUATION OPINIONNAIRE	78

ABSTRACT

PHYSIOLOGICAL AND NUTRITIONAL IMPLICATIONS OF HERBAL TEA USE

by

Maura Patricia Mihalakis

Master of Science in Home Economics

The purpose of this project was to develop a reference manual on the physiological and nutritional implications of herbal tea use for dietitians and nutritionists. The objective was to provide information on these teas that could be used when counseling patients/clients.

In recent years, there has been renewed interest in herbal medicine for a myriad of sociological and economic reasons. In spite of this renewed interest, dietitians and nutritionists trained in scientific nutrition very often are not familiar with herbal tea use. This was the motivating factor in designing the reference manual.

The evaluation of this project was completed by five consulting dietitians and nutritionists who read the reference manual and answered an opinionnaire regarding the usefulness of this project.

CHAPTER I
INTRODUCTION

Over the past decade, there has been an increase in the popularity of herbal teas. The general public has become more conscious of their health, and more active in the pursuit of good health. With the physiological effects of caffeine well documented in the popular literature, many people are turning to consuming non-caffeinated beverages. Indeed, this new interest in health is not only motivating people to consume herbal teas as beverages; they are also consuming these teas as "medicine" to treat a variety of illnesses in lieu of seeing a physician. Tyler (10) believes that this is due to dissatisfaction with modern medical care, and can be traced to:

- 1) Disillusionment with modern medicine.
- 2) The high cost of medical care.
- 3) The inability of medical science to cure all diseases.
- 4) The perception of herbs as "natural" and therefore superior to other medicines.

In the minds of many people, the medicinal use of herbal teas satisfies many (if not all) of these points. The cost of herbal remedies is significantly

lower than most prescription (and non-prescription) medications. The continuing disillusionment with modern medicine leads people in search of the "good old days" of plant medicines. It can also be noted that, while browsing through many modern herbals, simple "cures" can be found for even the most vexing diseases, such as cancer, mental retardation or obesity. It is because of these factors that herbs and similar compounds generated a 1.1 billion dollar industry in 1978. This figure is expected to triple by the end of the 1980's (10).

Because of this increased popularity of herbal teas, dietitians need a manual on herbal teas and their physiological and nutritional effects that may be referenced when counseling a patient who is consuming herbal teas. Many so-called "nutritionists" (who have no formal education or training in scientific nutrition) commonly recommend herbal teas for patients as a "healthy" beverage in place of coffee, tea, soft drinks or alcohol. Of even greater concern is the practice of many of these "nutritionists" in prescribing herbal teas as treatment for medical conditions. This advice is carried over to the popular press resulting in a constant supply of articles extolling the "virtues" of herbal teas. It is imperative, therefore, that the dietitian be exposed to information regarding the uses (and abuses) of herbal teas so that they may counsel

their patients in an informed manner when questions arise.

Many dietitians are not familiar with herbal medicine, as the subject is rarely taught in accredited colleges and universities in the United States. It is the intent of this project to provide a reference manual for clinical and consulting dietitians on the nutritional and physiological implications of herbal tea consumption.

OBJECTIVES

The objectives of this reference manual are as follows:

1. To compile current available data on the physiological and nutritional implications of herbal tea consumption.
2. To develop a reference manual on herbal teas for use by clinical and consulting dietitians when counseling patients and developing educational materials.
3. To familiarize dietitians with the popular use of herbal teas and the consequences (if any) of their use.

JUSTIFICATION

Dietitians in general are not familiar with the physiological or nutritional effects of herbal tea use. Because of the popularity of these teas, it is important for dietitians to have a source of reference. Many popular "nutritionists" who are not trained in the

nutrition sciences routinely prescribe herbal teas either as a beverage or as treatment for a variety of ills. The dietitian, therefore, must have access to information on herbal teas if he or she is to properly educate patients who have chosen to consume these teas.

Herbs and herbal products are becoming a formidable commodity in the marketplace. Herbalife, one of the largest suppliers of herbal nutritional supplements, predicted 350 million dollars in revenue 1984 (6) and the popularity of these types of products shows no signs of decreasing. Many herbs have well-documented physiological and nutritional side effects that may be harmful, and these effects should be catalogued. It is also important to document those herbal teas that are not harmful. Many members of the medical community offer a blanket condemnation of anything that even remotely concerns herbs. This condemnation is not always warranted and may dissuade a patient from consuming a harmless, enjoyable beverage.

The area of herbal teas is extremely complex. This reference manual will help clarify many points (both pro and con) that can help the dietitian to counsel patients in an informed, non-biased manner.

LIMITATIONS

There are literally hundreds of plant substances that are used in the form of teas. This manual will address only twenty-four such teas. These teas were chosen on the basis of popularity, as observed in modern herbal literature and herbal catalogs, as well as their availability in stores carrying herbal teas.

It is intended that this reference manual be based on the most current scientific research on the physiological effects of herbal tea use. This encompasses such areas as biology, botany, pharmacognosy, physiology, chemistry and nutrition. Much research in the area of herbal teas is done in countries where these teas are used extensively, such as China, India and the African nations. As is expected, most of this research is published in the native language and may not be available in an English translation. This literature will be included as a primary source only when an English translation is available.

CHAPTER II

REVIEW OF LITERATURE

The body of work that is the reference manual will constitute the review of literature for this project. Each herbal tea that is referenced will have the following information delineated (when available):

1. The vernacular (popular names for each herb as well as the scientific (Latin) name.
2. The popular medicinal uses for each tea.
3. The chemical components of each herb.
4. The nutrient composition of each herb (composition of tea will be given when available.)
5. Physiological and nutritional implications of herbal tea consumption.

CHAPTER III

METHODOLOGY

In preparing this reference manual, current literature in areas of chemistry, botany, pharmacology, pharmacognosy, physiology and nutrition, as well as other pertinent fields were consulted. In addition, the field of popular herbal traditions and treatments was also reviewed to identify the most common medicinal uses for the referenced teas. The twenty-four teas that were referenced in this manual were chosen based on popularity of usage, as determined by a review of popular herbal literature and catalogs, as well as observation of availability in stores selling herbal remedies. To test the adequacy of this manual as a reference source, the manual was distributed to clinical and consulting dietitians and nutritionists. An opinionnaire was given to these dietitians and nutritionists regarding the completeness of information, usefulness and fairness of presentation. A space was included for any comments the reviewers wished to make.

CHAPTER IV
RESULTS AND DISCUSSION

The section "Physiological and Nutritional Implications of Herbal Tea Use" (Appendix A) was developed by means of a thorough review of the literature. This manual was distributed to five dietitians and nutritionists to be reviewed and evaluated. The results of each opinionnaire is listed below. A determination was then made by the author regarding whether the original objectives were met.

The Completeness of the Information Presented

Question #1 determined if the manual, "Physiological and Nutritional Implications of Herbal Tea Use" was complete in its presentation of the information it contained. All five reviewers responded "yes" to this question.

Fair Treatment of Material

Question #2 addressed whether the treatment of the data contained in the manual was fair and unbiased. All five reviewers responded "yes" to this question, indicating

that the treatment of the subject was fair and not subject to the personal feelings of the author.

Usefulness of Manual in a Counseling Setting

Question #3 determined whether this manual would prove a useful addition to a patient/client counseling session. All five reviewers said "yes," they would consider it a useful addition to their counseling sessions.

Additional Comments

Question #4 allowed the reviewers to make any comments or suggestions that they wished regarding this reference manual. Only one of the reviewers made an additional suggestion for this manual. This dietitian commented that she would like to see a conclusion chapter included in the manual summarizing the data included in this reference as well as offering final conclusions and opinions on herbal teas.

Overall Response

The overall response to this reference manual was very positive. The reviewers felt that this manual would be useful in educating patients/clients regarding the use of herbal teas. In addition, one nutritionist commented that she was discontinuing the intake of a tea that she had been using based on the information provided in the manual. All reviewers had been in counseling sessions where they were questioned on herbal teas, yet they did not know where to go for this information. All reviews intended to use the manual in future counseling sessions.

Project Rating

This project was rated highly by all reviewers. They stressed the thoroughness of the manual and the unbiased treatment of the topic, as well as the need for this type of work in their reviews. Based on the reviewer reactions, this author feels that this manual has met the objectives set for it and that it can prove useful as a teaching and counseling reference to dietitians and nutritionists.

CHAPTER V

SUMMARY AND CONCLUSIONS

✓Herbal teas have been used from time immemorial to treat disease and maintain general good health. This belief in herbal medicine is a strong, deep-rooted belief that continues to modern times. Sometimes this faith in teas is deserved, sometimes it is not, but it continues nonetheless. Because teas are consumed as a beverage, the public generally sees teas as the realm of the nutritionist or dietitian, though the vast majority of nutritionists and dietitians trained in scientific nutrition have no conceptual knowledge of these teas. ✓ (The use of teas has, in general, been discontinued by the medical establishment in the United States.) This leaves the nutrition professional in a quandary: "How can I counsel patients/clients in an area I'm not familiar with?" Hence, this reference manual in herbal teas was conceived.

This manual documented selected herbal teas and summarized the available subject data. Popular uses of the tea, chemical components, and nutritional and physiological implications of use were designed to provide a ready source of data for use by consulting dietitians and nutritionists in a counseling environment. In developing this reference, the author

researched the current literature in pertinent areas, interpreted and condensed it for use by the nutrition professional.

The mode of evaluation chosen for this manual was an opinionnaire (Appendix B) distributed to consulting dietitians and nutritionists. Three of the reviewers were clinical dietitians (two hold Master's degrees), and two of the reviewers were consulting nutritionists (one specializing in sports nutrition, the other working with the elderly). All reviewers were asked for recommendations (which were included in chapter four). The overall response to the reference manual was positive.

The reference manual as seen in Appendix A differs slightly from that evaluated by the reviewers. Changes were made in response to recommendations by the graduate committee. It is the opinion of the author that, based on the results of the opinionnaire, the objects of this project have been met.

In conclusion, it should be noted that the area of herbal medicine has largely been ignored for the last few decades, and many areas of research that would prove valuable have not been adequately studied. These areas include:

- 1) Nutritional analysis of herbal teas.
- 2) Actual nutritional effects (in humans) of herbal tea use.
- 3) The cultural and sociological causes of the recent upswing in the use of herbal teas.

With these thoughts in mind, this reference manual will prove a good reference for professional and student use, as well as a sound starting point for future research.

APPENDIX A

APPENDIX A

REFERENCE MANUAL ON THE PHYSIOLOGICAL AND
NUTRITIONAL IMPLICATIONS OF HERBAL TEA USE

This manual was prepared for consulting dietitians and nutritionists as an aid in counseling patients/clients in the use (and abuse) of herbal tea preparations.

**The Physiological and Nutritional
Implications of Herbal Tea Use**

by

Maura Mihalakis

TABLE OF CONTENTS

Introduction	19
Angelica	22
Belladonna	24
Buchu	27
Burdock	29
Comfrey	32
Fenugreek	34
Gentian	36
Goldenseal	38
Hawthorn	40
Juniper	42
Licorice Root	44
Linden	47
Lovage	49
Pennyroyal	51
Peppermint	53
Red Clover	55
Rose Hips	57
Rue	59
St. John's Wort	61
Sassafras	63
Senna	65
Shavegrass	67
Valerian	69

TABLE OF CONTENTS (con't)

Wormwood	71
Yohimbe	73
References	75

INTRODUCTION

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Common Name: Angelica (Angelica archangelica L.).

Synonyms: Garden Angelica, European Angelica.

Popular Medicinal Uses: Angelica has been used for centuries to treat colds, coughs and bronchial ailments as well as stomach diseases including ulcers, gastritis and cancer (3, 4). It is also a common treatment for anorexia. It has been described as an abortifacient, a diuretic, emmenagogue, spasmolytic, diaphoretic and carminative (2, 3, 4, 7, 10).

Chemical Components: The roots and fruits of the Angelica plant contain many coumarins and fluorocoumarin substances including angelicin, bergapten, xanthotoxin, umbelliprenin and archangelicin (3, 4). The acid components present in Angelica are angelic, fumaric, succinic, caffeic, chlorogenic, quinic, lauric, tridecanoic, myristic, pentadecanoic, palmitic, palmitoleic, stearic, oleic, linoleic, linolenic, and others (4). Additional components include resins, starches and sugars (4). The root contains additional terpene substances. Nutrient composition of Angelica and Angelica tea is not available.

Physiological and Nutritional Implications of

Consumption: Certain fluorocourmarins (angelicin, bergapten, imperatorin, xanthotoxin) can cause photosensitivity when touched to the skin (3, 4, 10). Tyler (10) cites studies demonstrating that these same compounds are carcinogenic and mutagenic, and concludes that unnecessary contact should be avoided.

Historically, Angelica has been used as a disphoretic and diuretic. This may be of concern as abuse of such substances has been known to cause potassium depletion, but as the research stands at this time, there does not appear to be any clinical evidence to show that Angelica exhibits either of these properties (10).

One final note on Angelica: The popular press as well as advertisers of herbal products sometimes seem to stress (albeit covertly) the use of Angelica as an abortifacient. It must be stressed that the intake levels required to induce abortion have produced severe poisoning (10).

Common Name: Belladonna (Atropa belladonna L.).

Synonyms: Black Cherry, Deadly Nightshade, Dwale, Poison Black Cherry.

Popular Medicinal Uses: Belladonna has been used as an antispasmodic, calmative, diaphoretic, diuretic, narcotic, antiasthmatic and anodyne (2, 3). It has been used to treat gastritis, pancreatitis, chronic urethritis, miscellaneous tumors and cancers, as well as for biliary colic and other conditions (3).

Chemical Components: Plant contains alkaloids such as l-hyoscyamine, l-scopolamine, and atropine. Additionally, alkaloids present include N-oxides and l-hyoscyamine N-oxide. The flavinoid compounds present in the herb are scopoletin, 7-methylquercetin and methykaempferol (4). Tannin has also been found (3). Nutrient composition for Belladonna and Belladonna tea is not available.

Physiological and Nutritional Implications of

Consumption: Belladonna and its derivatives have a long history of medicinal uses, and these uses are still common today. As of 1973, 1.5 percent of all U.S. prescriptions contained the alkaloid atropine.

Compounds containing atropine, l-hyoscyamine and/or scopolamine occur in almost 30 percent of anti-spasmodics, 15 percent of antidiarrheals, 5 percent of antacids and over 75 percent of mydriatic prescriptions (3).

It is this fact that is responsible for Belladonna's continued use despite its infamous toxicity (3, 4, 12). Atropine is an anticholinergic compound, as are l-hyoscyamine and l-scopolamine. In addition, l-scopolamine is also a strong hypnotic (4). Intake of ✓Belladonna tea may produce the following toxicity symptoms (4):

- Dry mouth
- Intense thirst
- Difficulty in swallowing
- Burning pain in the throat
- Pupil dilation
- Blurred vision
- Flushing, hot/dry skin
- Fever
- Increased heart rate
- Elevated blood pressure
- Kidney pressure and the inability to void
- Constipation
- Confusion
- Excitability
- Hallucinations and delirium

Death from Belladonna poisoning has occurred. There has been no determination made regarding "safe" levels of Belladonna tea intake and, considering the severe toxic reactions exhibited from past consumption,

it is recommended that any intake of Belladonna tea be strongly discouraged.

Common Name: Buchu (Barasoma betulina [Berg.] Bartl & Wendl.).

Synonyms: Bookoo, Buccu, Oval Buchu, Short Buchu, Diosma.

Popular Medicinal Uses: Buchu is generally used for urinary disorders such as cystitis, urethritis and hematuria. It is also used to treat leukorrhea, rheumatism, gout and cholera (3, 4). Medicinal properties attributed to this herb are carminative, diuretic, stimulant, stomachic, diaphoretic and antispasmodic (2, 3, 7, 8).

Chemical Components: Buchu leaf is made up of flavinoid compounds such as diosmin, rutin, and quercetin-3, 7-glycoside. It contains resin and mucilage as well as a volatile oil consisting of approximately 100 compounds including 1-pulegone, isopulegone, diosphenol, gamma-diosphenol, 1-isomethone, d-menthone, d-limonene, 8-mercapto-p-menthan-3-one and others (4). Nutrient composition of Buchu and Buchu tea is not available.

Physiological and Nutritional Implications of

Consumption: The diuretic and antiseptic actions of

Buchu are attributed to the volatile oil of the plant. These properties are extremely mild and no toxicity has been reported (1). The diuretic action is no greater than that of xanthine alkaloids present in coffee or tea, though pregnant women should avoid use of diuretics (13).

Both Tyler (10) and Duke (3) consider Buchu safe, though Tyler qualifies this by saying that due to the mild effects, Buchu tea should not be used when a stronger diuretic substance is indicated. Buchu oil has been approved as a food additive and is used extensively in beverages, baked goods and condiments (4).

Common Name: Burdock (Arctium lappa L. [European source] and Arctium minus [American source]) (10).

Synonyms: Beggar's Burr, Hardock, Thorny Burr, Bardana Burrseed, Clot burr, Cockleburr, Hareburr, Hurrburr, Turkey Burseed.

Popular Medicinal Uses: Burdock is said to possess antiseptic, diuretic, aperient, cholagogue, antipyretic, antitumor and hypoglycemic activity (3, 7). It is also said to be useful as a stomachic. Burdock is used to treat cancers, stomach ailments, eczema, gall and bladder stones, gonorrhoea, syphilis and leprosy (3). It is also considered a general blood cleanser and tonic (2).

Chemical Components: Burdock leaves contain arctiol, dehydrofukinone, eremophilene, beta-eudesmol, fukonine, fukinanolide and taraxasterol, among other compounds. Roots contain polyphenolic acids, gamma-guanidino-n-isovaleric and propionic acids, and various other compounds including polyacetylenes (3). Seeds contain fixed oils, glycosides, lignins, chlorogenic acid and other compounds (3, 4). Nutrient composition of 100 grams of raw Burdock root contain (3):

Calories:	89.0	
Protein:	2.5	g
Fat:	.1	g
Carbohydrate:	20.1	g
Fiber:	1.7	g
Calcium:	50.0	mg
Phosphorus:	58.0	mg
Iron:	1.2	mg
Sodium:	30.0	mg
Potassium:	180.0	mg
Thiamine:	.25	mg
Riboflavin:	.08	mg
Niacin:	.3	mg
Ascorbic Acid:	2.0	mg

* Note: Nutrient composition of Burdock tea is not available.

Physiological and Nutritional Implications of

Consumption: There appears to be no evidence for any therapeutic benefits from consuming Burdock tea. The fresh root has been found to have two polyactylene compounds that possess bacteriostatic and fungistatic properties; however, only traces of these compounds have been found in the dried herb. It is highly unlikely that Burdock tea made from the dried herb would contain significant levels of these compounds.

Leung (4) cites a study in which Burdock fruit exhibited hypoglycemic activity in rats, though this research does not appear to be confirmed by other such studies.

Burdock tea does not appear to be harmful, but neither does it have particular nutritional or physiological benefits associated with it.

Additionally, there have been cases reported in the literature of accidental atropine poisoning from Burdock tea that had been contaminated by plant or other sources (1,9). Because of this, consumption cannot be recommended, and should indeed be discouraged.

Common Name: Comfrey (Symphytum officinale L.).

Synonyms: Boneset, Knitbone, Blackwort, Slippery Root, Bruisewort, Salsify, Wallwort.

Popular Medicinal Uses: Comfrey is considered useful in treating many varieties of ailments such as ulcers, arthritis, bronchitis, gallstones, diarrhea, gout, hematuria, rheumatism, cancers, dysentery, excessive menstrual flow and many others (3, 4). Comfrey is said to possess anodyne, astringent, demulcent, expectorant, hemostatic, refrigerant and vulnerary properties.

Chemical Components: Comfrey root contains allantoin, alkaloid substances, lithospermic acid, approximately 29 percent mucopolysaccharides and gum (L(-)-xylose, L-rhamnose, L-arabinose, D-mannose and D-glucuronic acid). In addition, tannin, carotene, glycosides, isobauerenol, beta sitosterol, stigmasterol, steroidal saponins, triterpenoids, choline, consolidine, silicic acid, lasiocarpine, viridiflorine, echinatine and heliosupine-N-oxide (3). Nutrient composition of 100 grams of Comfrey includes:

Thiamine	.5	mg
Riboflavin:	1.0	mg
Nicotinic Acid:	5.0	(no unit of measure supplied)

Pantothenic Acid:	4.2	mg
Vitamin B12:	.07	mg
Vitamin A:	28,000	IU
Vitamin C:	100.0	mg
Vitamin E:	30.0	mg

* Note: Nutrient composition of Comfrey tea is not available.

Physiological and Nutritional Implications of

Consumption: Lithospermic acid isolated from Comfrey has been shown to exhibit antigonadotropic activity in rats (4). Any healing properties of Comfrey are usually attributed to the high allantoin content of the herb, as this compound has exhibited the ability to promote cell growth (10).

The herb contains tannin, as well as several pyrrolizidine alkaloids. These substances have been shown to be hepatotoxic (4, 10). Tyler (10) cites a case in which a 49-year-old woman consuming both Comfrey tea and Comfrey capsules for six months suffered serious liver damage (known as Budd-Chiari syndrome).

Tyler suggests the toxic effects of Comfrey may be cumulative over long periods of time. It should be noted, however, that not all strains of Comfrey contain pyrrolizidine alkaloids, and packages sold as Comfrey are not labeled as to the strain of the plant they are derived from. With this in mind, the use of Comfrey tea should be discouraged.

Common Name: Fenugreek (Trigonella foenumgraecum L.).

Synonyms: Greek Hayseed, Foenugreek.

Popular Medicinal Uses: Fenugreek tea is traditionally used to reduce fever, treat bronchitis, colds, coughs, digestive disorders, kidney ailments, beri-beri and impotence (3, 4). Fenugreek is reputed to be aphrodisiac, astringent, demulcent, diuretic, emmenagogue, emollient, expectorant, and a febrifuge (3).

Chemical Components: Fenugreek contains simple alkaloids, saponins, steriod sapogenins, flavinoids such as vitexin, vitexin-7-glucoside, orientin, arabinoside, homoorientin, saponaretin, vicenin-1, vicenin-2, quercetin, luteolin and vitexin cinnamate. Fenugreek also contains fixed oils and has a high amount of mucilage, protein and free amino acids (4). Nutrient composition of 1 tablespoon of Fenugreek seed is as follows (11):

Calories	36.0	
Protein:	2.55	g
Fat:	.71	g
Carbohydrate:	6.48	g
Fiber:	1.12	g
Calcium:	19.0	g
Phosphorus:	33.0	mg
Iron:	3.72	mg
Magnesium:	21.0	mg

Potassium:	85.0	mg
Sodium:	7.0	mg
Zinc:	.28	mg
Thiamin:	.036	mg
Riboflavin:	.041	mg
Niacin:	.182	mg
Ascorbic Acid:	.33	mg
Folacin:	6.326	mcg

* Note: Nutrient composition of Fenugreek tea is not available.

Physiological and Nutritional Implications of

Consumption: Fenugreek exhibits some hypoglycemic activity that has been attributed to coumarin compounds and nicotinic acid, and also to betaine and trigonelline (3). The soothing properties exhibited when treating stomach or throat may be due to the high mucilage content of the herb (10), though the exact amount of mucilage present in Fenugreek tea has not been determined.

Other medicinal uses for Fenugreek tea have not proved significant. Any therapeutic effects from drinking Fenugreek tea are minor and the tea can be considered harmless for normal use (10). Fenugreek has been approved as a food additive (GRAS) and is used in spice blends, beverages, candy and baked goods (4).

Common Name: Gentian (Gentiana lutea L.).

Synonyms: Baldmony, Felwort, Bitterroot.

Popular Medicinal Uses: Gentian tea is used to treat anorexia, blood disorders, cancers, colds, convulsions, debility, diarrhea, dysmenorrhea, dyspepsia, heartburn, gastritis and general gastrointestinal distress, fever and jaundice (3, 4). This herb is said to be an anthelmintic, antiseptic, emmenagogue, febrifuge, stimulant, stomachic and tonic.

Chemical Components: Gentian contains alkaloids such as gentianine, gentialutine, bitter principles including amarogentin, gentiopicroside, gentiopicrin and swertiamarin, xanthones, triterpenes, sugars and volatile oils (4). Tannins and pectin have also been found (3). Nutrient composition of Gentian or Gentian tea is not available.

Physiological and Nutritional Implications of

Consumption: The alkaloid gentianine has exhibited anti-inflammatory effects in lab animals (3, 4). Experiments have shown some choleric effects in increasing secretion of bile (4, 10), but no other therapeutic uses have been confirmed.

Gentian has been approved for use as an additive in food and is used in beverages, desserts and baked goods. Tyler (10) cites Pahlow in offering this warning regarding Gentian: "In normal individuals, gentian is unlikely to produce undesirable side effects, but . . . the drug may not be well tolerated by those with very high blood pressure or by expectant mothers."

Common Name: Goldenseal (Hydrastis canadensis L.).

Synonyms: Jellow Root, Turmeric Root, Indian Dye, Orange Root, Jaundice Root, Eye Root, Eye Balm.

Popular Medicinal Uses: Goldenseal is used in the treatment of inflamed mucous membranes. It has also found use as a treatment for cancers, hemorrhoids and nasal congestion. This herb has been used as an antiperiodic, antiseptic, hemostatic, laxative, diuretic and tonic (3, 4).

Chemical Components: The active compounds in Goldenseal include isoquinoline alkaloids (hydrastine, berberine, canadine, candaline, 1-alpha-hydrastin, 5-hydroxytetrahydroberberine, as well as other alkaloids. Goldenseal also contains meconin, chlorogenic acid, lipids (both saturated and unsaturated), resin, starch, sugar and volatile oil (4). Nutrient composition on Goldenseal and Goldenseal tea is not available.

Physiological and Nutritional Implications of

Consumption: Any medicinal properties of the tea can be attributed to the alkaloid content of the herb. These alkaloids exhibit effects on the circulatory

system, the central nervous system, bile secretion and have antibacterial effects. There is disagreement among authorities as to whether these effects are strong or weak (3, 4, 10).

Tyler (10) believes that doses required to produce therapeutic effects are so large that they may be toxic, though neither he nor any other author identifies what levels are considered toxic. The tea has been used as an antiseptic in treating chapped lips, canker sores and similar complaints and may be effective in treating mild cases of these problems (10).

Duke (3) cites Tierra in noting that excessive and continual use of Goldenseal may diminish vitamin B absorption (whether vitamin "B" is B-complex or a specific vitamin is not mentioned) and also states that women who have a tendency to miscarry should not consume the herb. These concerns were not voiced by other sources and should be studied further.

There seems to be little consistent data on the use of this herb and its side effects, and until more is known it would be wise to discourage its use.

Common Name: Hawthorn (Crataegus oxycantha L.).

Synonyms: English Hawthorn, May Bush, May Tree, Quick-Set, Thornapple, White Thorn.

Popular Medicinal Uses: The major medicinal uses associated with Hawthorn flowers and berries are cardiotoxic (10). In addition, Hawthorn is used as an astringent, a depurative, diuretic, stomachic and tonic. It has traditionally been used to treat arteriosclerosis, dropsy, dyspnea, hypertension, nephrosis and sore throat (3).

Chemical Components: Hawthorn berries contain citric, crataegus and tartaric acids, pectins, fatty and essential oils, tannin, mucilage, paraffin, sorbitol and nicotinic acids (3). Flowers contain such components as essential oil, quercetin, quercitrin, and trimethylamine (3). Nutrient composition for Hawthorn and Hawthorn tea is not available.

Physiological and Nutritional Implications of

Consumption: The cardiotoxic effects of Hawthorn are probably due to the many flavinoid components. These compounds dilate blood vessels and can therefore lower the blood pressure. There may be other favorable

effects on the heart and, in fact, Hawthorn has shown favorable effects particularly after the heart has been damaged (10).

Duke (3) cites research by List and Horhammer noting "remarkable" levels of aluminum, sodium, potassium, calcium and phosphorus, but the actual levels of these nutrients are not given. Hawthorn has been reported to have large amounts of vitamin C, but it has not been determined how much of this nutrient is present in a tea decoction or infusion. Tyler (10) suggests that Hawthorn is a relatively safe herb with potential health benefits.

Due to the dangers of the plant's tannin content (tannin has been shown to be hepatotoxic in rats (4), its cardioactive properties and the ever-present concern of patient self-medication, the use of Hawthorn tea should not be recommended, even though limited use of it should not prove harmful.

Common Name: Juniper (Juniperus communis L.).

Synonyms: Prickly Juniper.

Popular Medicinal Uses: Juniper tea has been used to treat cancer, tumors, swelling, arteriosclerosis, arthritis, bronchitis, colic, dropsy, dysentery, gastroenteritis, gout, leukorrhea, lumbago, lung disorders, nephrosis, urogenital and venereal diseases (2).

Chemical Components: Juniper berries contain volatile oil (comprised of the monoterpenes alpha-pinene, myrcene, sabinene, as well as others), sugars, glucuronic acid, l-ascorbic acid, resin, gallotannins, geijerone, 1,4-dimethyl-3-cyclohexen-1-yl- methyl ketone, diterpene acids and beta-elemen-7 alpha-ol (4). Nutrient composition of Juniper and Juniper tea is not available.

Physiological and Nutritional Implications of

Consumption: The diuretic action is attributed to terpinen-4-ol. This compound will increase the glomerular filtration rate of the kidneys and in excessive doses can cause kidney irritation (10). The diuretic action is quite strong and may lead to the

potassium depletion (13) that is seen whenever diuretics are abused. In addition, diuretics should not be used by pregnant women as their use may cause damage to the fetus (13).

Juniper should not be used by people with renal problems due to the potential for kidney irritation, and it should not be used by pregnant women as it can also stimulate contractions in the uterus (10). Though Juniper berries have been granted GRAS status as a food additive, it would be prudent to avoid Juniper tea as there are other diuretic and laxative products that are safer and more effective (4). Symptoms of Juniper overdose have been reported and include the following (3):

- Pain in or near kidney
- Strong diuresis
- Albuminuria
- Hemeturia
- Purplish urine
- Accelerated heartbeat and blood pressure
- Abortion

Common Name: Licorice Root (Glycyrrhiza glabra L.).

Synonyms: Sweet Root, Sweet Wood.

Popular Medicinal Uses: Licorice Root has traditionally been used as a demulcent, diuretic, expectorant, estrogenic, and laxative (3). It has been used in the treatment of ulcers, sore throat, malaria, bronchitis, abdominal pain, tuberculosis and food poisoning (3, 4).

Chemical Components: The major active compound in Licorice is the tripterene glycoside glycyrrhizin. Licorice is also made up of flavinoids, isoflavinoids, chalcones, coumarins, triterpenoids, sterols, starch, sugars, lignin, amino acids, amines, gums, wax, a volatile oil and many other compounds (4). Nutrient composition for Licorice Root and Licorice Root tea is not available.

Physiological and Nutritional Implications of

Consumption: Licorice has been known to exhibit estrogenic, antiulcer, anti-inflammatory, antiallergic, antitussive, anticonvulsive and antibacterial properties (4). This research has been limited and more study of

these properties is needed before judgment can be made on the efficacy of Licorice tea in these areas.

Licorice has also been shown to inhibit tumor growth in sarcoma 45 and Ehrlich ascites cells due to a glycyrrhetic acid salt and its derivative (4).

The compound glycyrrhizin is responsible for a Licorice overdose condition known as "pseudoaldosteronism." The symptoms of pseudoaldosteronism are similar to the symptoms of excessive aldosterone secretion (10). The symptoms include (10):

- Headache
- Lethargy
- Sodium retention
- Edema
- Excessive potassium excretion
- High blood pressure
- Heart failure/cardiac arrest

The level of glycyrrhizin present in Licorice tea has not been determined, but it is prudent to discourage the use of Licorice tea (and all Licorice containing products) in people with histories of hypertension of sodium retention. It would also be advisable to limit intake of Licorice tea and products for those not in risk groups. Toxicity results from fairly large quantities and Licorice has not shown toxicity in small

doses. Licorice Root has been granted GRAS status and is used extensively in beverages and foods (4).

* Note: Most "Licorice" products do not contain Licorice, but are flavored with Anise seed. Check labels before limiting the intake of any "Licorice" product.

Common Name: Linden (Tilia cordata Mill., Tillia platphyllus Scop., Tilia Europoea L.).

Synonyms: Lime, Limn, Tilleul.

Popular Medicinal Uses: The most common use for Linden flowers is as a diaphoretic, though they are also used as a nervine, sedative, spasmolytic, stomachic and diuretic. Linden tea has been used to treat dyspepsia, gallstones, headache, hepatitis, nephrosis, neuralgia, rheumatism, epilepsy and hysteria (3).

Chemical Components: Linden flowers contain mucilage, tannin, gums, hesperidin, saponin, sugars, and tocopherol, among other compounds. In addition, Linden also contains essential oils and the amino acids cysteine, cysine, phenylalanine, alanine, isoleucine, leucine and serine (3). Additional nutrient composition information for Linden flower and Linden tea is not available.

Physiological and Nutritional Implications of

Consumption: The diaphoretic properties of Linden are due to quercetin, kaempferol and p-coumaric acid (10). Authorities appear to agree that Linden tea is a harmless beverage and is useful as a diaphoretic (12)

though other uses for the herb have not been shown. In addition, there does not seem to be concern regarding the potential hepatotoxic tendencies of tannin, even though the tannin content of Linden flowers can be as high as 2 percent (10).

This may not be of concern to the healthy general public, but should be considered in those with the applicable medical histories. There have been reports of heart damage due to excessive intake of Linden, and those who have cardiac conditions should avoid this herb (3, 10).

There has not been any work in assessing the impact of the phenylalanine in Linden tea on those with PKU. This however may be a concern, especially if the herb is used excessively. It is best for phenylketonurics to approach Linden (and all untested products) with caution. For those who do not have any of the above mentioned concerns, it should be noted that excessive use of diaphoretics may cause sodium depletion (8).

Common Name: Lovage (Levisticum officinale W.D.J. Koch.).

Synonyms: Sea Parsley, Shunis, Smellage, Smallage, Maggi Herb.

Popular Medicinal Uses: The root of the Lovage plant has been used as a diuretic, stomachic, expectorant and emmenagogue (4) to treat such conditions as kidney stones, jaundice, malaria, menstrual disturbances, fever and digestive disorders (2, 4, 7).

Chemical Components: Lovage root is approximately 1.0 percent volatile oil, with terpenoids, volatile acids, coumarins, beta-sitosterol and its gum, resin and other compounds (4). Nutrient composition of neither Lovage nor Lovage tea is available.

Physiological and Nutritional Implications of

Consumption: The diuretic action of Lovage is due to the volatile oil, specifically compounds known as "phthalides." This diuretic action has proved to be quite severe in lab animals (4, 10). Although the diuretic action in humans has not been determined, it is known to be pronounced. Abuse of diuretic substances can cause potassium depletion (13). In addition, use of

diuretics by pregnant women should be discouraged as it can be dangerous to the fetus (13).

Some dermatitis has been shown in lab animals injected with Lovage oil, but this has not been demonstrated in humans. Lovage root may also help relieve gas pains and flatulence (10). Lovage oil has been approved as a flavor component and is used in many foods and beverages (4).

Common Name: Pennyroyal (Hedeoma pulegioides (L.) Pers., and Mentha pulegium L.).

Synonyms: Mock Pennyroyal, Mosquito Plant, Squaw Balm, Squawmint, Tickweed.

Popular Medicinal Uses: Pennyroyal tea is used to treat uterine disorders, fainting, gall ailments, gout, hepatitis, coughs, colds, nervous and menstrual disorders. Pennyroyal is considered a stimulant, carminative, diaphoretic, diuretic and emmenagogue (3, 10).

Chemical Components: The components of American Pennyroyal (Hedeoma pulegioides (L.) Pers.) are identified as essential oil, pinene, limonene, dipentene, 1-methyl-3-cyclohexanone, menthone, isomenthone, diosmin and formic, acetic, butyric, isoheptylic, octoic, decylic and salicylic acids (3). Duke (3) lists the components of European Pennyroyal (Mentha pulegium L.) as a volatile oil, lauric, myristic, palmitic, and beta-methyl-adipic acids, as well as beta-methyl-delta-isobutyryl-valeric acid, phenol, o-cresol, salicylaldehyde, eugeonal, diosmin and hesperidin. Nutrient composition of Pennyroyal and Pennyroyal tea is not available.

Physiological and Nutritional Implications of

Consumption: Pennyroyal is 1-2 percent volatile oil, and this volatile oil is 85-92 percent pulegone (10). Pulegone is highly toxic and can cause severe liver damage. Pennyroyal oil has been used as an abortifacient and has caused death from damage to renal and hepatic systems (1, 10). Pennyroyal tea has not demonstrated therapeutic effects, and due to its high toxicity, Pennyroyal tea (or any Pennyroyal-containing compound) should not be consumed.

Common Name: Peppermint (Mentha piperita L.).

Synonyms: No common synonyms.

Popular Medicinal Uses: Peppermint tea is commonly used as a stimulant, stomachic and carminative in treating indigestion, flatulence, colic (10), headaches and asthma (2).

Chemical Components: Peppermint oil contains volatile oil, viridiflorol, pulegone, 1,8-cineole, piperitone, caryophyllene, bisabolene, isomenthone, isomenthol, alpha- and beta-pinenes, neomenthol, ledol, d-trans-sabinene hydrate, bicycloelemene, flavinoid compounds, phytol, tocopherols, carotenoids, betaine, choline, azulenes, rosmarinic acid and tannin (4). Nutrient composition of Peppermint or Peppermint tea is not available.

Physiological and Nutritional Implications of

Consumption: The medicinal properties associated with Peppermint tea are due to the volatile oil content of the tea. The menthol and flavinoid compounds stimulate bile flow and promote digestion (4, 10). The volatile oils also have spasmolytic properties and facilitate eructation (10). Antispasmodic properties of volatile

oils account for the use of Peppermint tea to relieve menstrual cramps.

Leung (4) cites studies showing antimicrobial, antiviral, anti-inflammatory, antiulcer and cytotoxic properties, but these properties must be further researched before conclusion can be drawn.

Peppermint has been designated GRAS and is used extensively in foods and beverages (4). Peppermint appears to be safe and useful for minor digestive discomfort and cramps (10). There are, however, some cautions.

Peppermint tea is popular as an appetite suppressant. Peppermint oil will cause a temporary stop to hunger pangs due to its spasmolytic properties, but after hunger pangs return they will be stronger. For this reason, Peppermint tea is not recommended for dieters.

In addition, Peppermint tea should not be given to infants as the menthol may cause them to choke (10). There is a practice among many Latino cultures of treating coryza in childhood with Peppermint and Chamomile teas in absence of any other food or beverage. This can cause clinical water intoxication due to the extremely low sodium content of these teas (5). A 10-week-old child was diagnosed with severe hyponatremia as a result of this treatment (5).

Common Name: Red Clover (*Trifolium pratense* L.).

Synonyms: Broadgrass, Honeysuckle, King's Crown, Sugar Plums, Meadow Clover, Purple Clover, Cow Clover.

Popular Medicinal Uses: Red Clover tea is used as a treatment for whooping cough, asthma, bronchitis, cancer, rheumatism, gout, liver disorders, venereal diseases, and many other conditions (3, 4, 10). It is also used as a blood tonic and purifier.

Chemical Components: Red Clover contains such components as isoflavones, flavones, coumarins, trans- and cis-clovamide, trifoliin, phaselic acid, a galactoglucomannan, sugars, protein and volatile oil (4). Nutrient composition for Red Clover and Red Clover tea is not available.

Physiological and Nutritional Implications of

Consumption: Both Duke (3) and Leung (4) state that estrogenic disorders have occurred in livestock grazing on Red Clover due to the activity of the isoflavones, formononetin, biochanin A, diadzein and genistein. There has been no determination made regarding how much (if any) of these compounds are present in Red Clover tea. Red Clover is also reported to have antispasmodic

and expectorant properties, though these properties have not been extensively studied (4).

The general consensus regarding Red Clover is that it is not considered harmful in small doses. As far as medicinal properties are concerned, Tyler (10) quotes the 1912 Council on Pharmacy and Chemistry of the American Medical Association: "We have no information to indicate that they [Red Clover preparations] possess medicinal properties."

Common Name: Rose Hips (Rosa canina L., Rosa rugosa Thunb., Rosa villosa L.).

Synonyms: Hipberries.

Popular Medicinal Uses: Rose Hip tea has mainly been consumed for its vitamin C content. It is a traditional antiscorbutic.

Chemical Components: Some of the constituents of Rose Hips include: carotenoids, flavinoids, pectic substances, polyphenols, leucoanthocyanins, catechins, vitamin C, riboflavin and sugars (4). Nutrient composition of Rose Hips and Rose Hips tea is not available.

Physiological and Nutritional Implications of

Consumption: Fresh Rose Hips are high in vitamin C, containing concentrations of .5-1.7 percent (10).

However, most of this vitamin C is destroyed during the drying and processing of the herb. Since most Rose Hip tea is made from dried product, the tea is a relatively poor source of vitamin C.

Rose Hips have a rather high concentration of pectin and malic and citric acids. These compounds are responsible for mild laxative and diuretic effects (10).

There appears to be no apparent toxic effects associated with the consumption of Rose Hip tea, though it cannot be considered a significant source of vitamin C.

Common Name: Rue (Ruta graveolens L.).

Synonyms: Common Rue, German Rue, Herb of Grace.

Popular Medicinal Uses: Rue is used as an emmenagogue, antispasmodic, uterine stimulant, hemostatic, vermifuge and abortifacient. Traditionally, Rue has been used to treat cancer of the mouth, various tumors, cough, croup, epilepsy, gout, headache, sciatica and amenorrhea (3).

Chemical Components: Rue contains a volatile oil, rutin, alkaloid substances, (gamma-fagarine, arborinine, kokusaginine and others), coumarin derivatives (bergapten, xanthotoxin and others) as well as many other compounds (4). Nutrient composition for Rue and Rue tea is not available.

Physiological and Nutritional Implications of

Consumption: The spasmolytic properties of Rue can be attributed to the furocoumarins bergapten and xanthotoxin, as well as the quinoline alkaloids. It is the coumarins that cause the toxicity associated with Rue. Severe gastric irritation has resulted from intake (10). The alkaloid arborine is an abortifacient. While Rue tea does have significant spasmolytic properties,

the potential hazardous effects makes the intake of Rue tea unadvisable. This is especially true for pregnant women.

Common Name: St. John's Wort (Hypericum perforatum L.).

Synonyms: Klamath Weed, Amber, Goatweed, Johnswort, Tipton Weed.

Popular Medicinal Uses: St. John's Wort has been traditionally used for bladder problems, bronchitis, consumption, diarrhea, dysentery, miscellaneous digestive disorders, dysmenorrhea, hysteria, insomnia, jaundice, depression, bleeding and hemorrhaging disorders, neuralgia, hemorrhoids, rabies and worms. This herb has seen a modern revival in Europe as a treatment for depression, gastritis, insomnia and water retention (3).

Chemical Components: This herb is made up of choline, rutin, glucosides, tannin, phobaphene, beta-sitosterol and alkaloids. St. John's Wort also contains a volatile oil (consisting of pinene, cineol, myrcene, cadinene, gurjunene, hypericin, and isovalerianic acid esters) and a fixed oil (containing stearic, palmitic and myristic acid esters, ceryl alcohol, phytosterol and hydrocarbons) (3). The nutrient composition of St. John's Wort and St. John's Wort tea is not available.

Physiological and Nutritional Implications of

Consumption: The main compound responsible for the medicinal properties of St. John's Wort is the pigment hypericin. This compound has a tranquilizing effect and may increase capillary blood flow and reduce fragility of capillaries (10). However, hypericin can also be toxic and has caused photosensitive reactions after ingestion (1, 12). This sensitivity reaction has caused facial swelling, skin irritation and appetite loss in livestock consuming this herb (3), though this reaction seldom happens in occasional use of the herb (10).

In addition, this herb has a high tannin content (approximately 10 percent). Tannin has been shown to be hepatotoxic in lab animals (4). In light of the possible toxic effects of this herb, consumption of St. John's Wort tea is not recommended.

Common Name: Sassafras (Sassafras albidum (Nutt.)
Nees).

Synonyms: Ague Tree, Cinnamon Wood, Saxifrax.

Popular Medicinal Uses: The bark of the Sassafras plant has been used to treat rheumatism, skin disorders, diarrhea (2), dropsy, arthritis, bronchitis, hypertension, venereal disease, kidney diseases, pneumonia and respiratory ailments, and typhoid (3). It is used as an alterative, anodyne, antiseptic, carminative, depurative, diaphoretic, diuretic, emmenagogue, stimulant and sudoforic (3).

Chemical Components: Sassafras contains a volatile oil consisting of 80-90 percent safrole, alpha-pinene, alpha- and beta-phellandrenes, 5-methoxyeugenol and other compounds (4). In addition to the volatile oil, Sassafras is composed of alkaloid substances such as boldine, norboldine, isoboldine, two lignin substances (sesamin and desmethoxyaschantin), sitosterol, tannins, resin and starch (4). Nutrient composition of Sassafras and Sassafras tea is not available.

Physiological and Nutritional Implications of

Consumption: Safrole, the major component of the

Sassafras volatile oil, has been shown to be hepatotoxic in lab animals (1). A strong cup of Sassafras tea may contain four times the minimal amount of Safrole that has been associated with toxicity (10). The use of Safrole, Sassafras and Sassafras oil in foods has been banned due to this hazard (4), only Safrole-free products are exempt.

In addition, Tyler (10) cites recent studies indicating that other compounds in Sassafras tea may be carcinogenic. There does not appear to be any therapeutic value to Sassafras tea and due to its potential dangers, intake of this tea should be discouraged.

Common Name: Senna (Cassia acutifolia Delile [Alexandrian Senna] and Cassia angustifolia Vahl [Tinnevelly Senna]).

Synonyms: Cassia, Alexandrian Senna, Khartoum Senna, Tinnevelly Senna, Indian Senna.

Popular Medicinal Uses: Senna has been used throughout history as a laxative and purgative.

Chemical Components: Both Alexandrian Senna and Tinnevelly Senna are very similar in composition. The active compound in both Sennas are diathrone glycosides (consisting of sennosides A and B, with lesser quantities of sennosides C and D). These glycosides do not appear in the fresh leaves, and are a by-product of the drying process. In addition, Senna leaves also contain free anthraquinones, free sugars, mucilage, flavonoid compounds, volatile oils and resins (4). Nutrient composition of Senna and Senna tea is not available.

Physiological and Nutritional Implications of

Consumption: The diathrone glycosides are responsible for the laxative action of this herb. These compounds act by stimulating peristaltic action of the colon

wall. The Medical Letter on Drugs and Therapeutics (1) cautions that Senna tea consumption has caused severe diarrhea in people consuming it. In addition to the laxative action, Senna may also be irritating to the colon wall (10).

The relative strength of any herbal remedy is dependent on many factors, including the processing of the plant and the method of tea preparation. It is difficult to judge the relative strength of Senna tea until after it has been consumed, and due to the potential harm associated with Senna consumption, it cannot be recommended. For those who wish to use laxatives, there are many safer and more predictable products available.

One final warning: Duke (3) notes that women who are breast feeding may pass the laxative compound to the child in breast milk.

Common Name: Shavegrass (Equisetum arvense L.).

Synonyms: Horsetail, Bottlebrush, Pewter Wort.

Popular Medicinal Uses: Shavegrass is used as a diuretic, in treating various diseases of the kidney and bladder, dropsy, tuberculosis, fever, gonorrhoea, gout, rheumatism and many forms of cancer. In external application, its astringent properties are said to stop wound bleeding and promote healing (2, 3, 10).

Chemical Components: Shavegrass has a silica and silicic acid content of about 5-8 percent and has been historically used for scouring and polishing of metals (3, 10). Shavegrass also contains equisetonin, and flavinoid glycosides such as isoquercitrin, galuteolin, and equisterin. Additional components include nicotine, resin, starch, tanning, beta-sitosterol, aconitic acid, oxalic acid, malic acid and tannic acid (3, 10).

Nutrient composition of 100 grams of fresh Shavegrass contains (3):

Calories:	20.0	
Protein:	1.0	g
Fat:	0.2	g
Carbohydrate:	7.1	g
Calcium:	58.0	mg
Phosphorus:	93.0	mg
Iron:	4.4	mg
B-carotene:	300	ug

Riboflavin:	.07	mg
Niacin:	5.6	mg
Ascorbic Acid:	50.0	mg

* Note: Nutrient composition of Shavegrass tea is not available.

Physiological and Nutritional Implications of

Consumption: Saponin and flavone glycosides may combine, accounting for the diuretic action of this tea, though the diuretic action is slight (10). Abuse of diuretic substances has been shown to cause a depletion in potassium, though the level of potassium loss due to the diuretic action of Shavegrass tea has not been determined. There appears to be no data supporting other medicinal uses of Shavegrass tea at this time.

There is evidence that Shavegrass contains a thiaminase compound, and livestock fed Shavegrass have developed classic symptoms of Beri-beri such as loss of appetite, loss of muscle control, diarrhea, labored respiration, convulsions, coma and death (1).

Common Name: Valerian (Valeriana officinalis L.,
Valeriana mexicana D.C. and Valeriana jatamansii Jones).

Synonyms: Valerian Root, All Heal, Cat's Love, Cat
Finger.

Popular Medicinal Uses: Valerian has been used
historically as a relaxant and tranquilizer. It has
also been used as an anodyne, antispasmodic and
stomachic.

Chemical Components: The active compounds in Valerian
root appear to be valepotriates. These include
valtrates, didrovaltrates and isovaltrates. In
addition, Valerian contains valerosidatum, alkaloid
compounds, choline, methy-2-pyrrolyl ketone, chlorogenic
acid, caffeic acid, beta-sitosterol, tannins, gums and
volatile oil (composed of bornyl acetate and
isovalerate, among other compounds) (4).

Physiological and Nutritional Implications of

Consumption: The physiological effects of Valerian are
probably due to the valepotriate content. These
properties include antispasmodic and CNS depressant
activities (4, 10). Lueng (4) identifies the additional
properties of Valerian as hypotensive (in lab animals),

antibacterial, antidiuretic. It should be noted, however, that valepotriates are very unstable in the presence of heat, mineral acids and alkali substances (10).

This brings into question the relative medicinal value of Valerian root tea. While the physiological effects of valepotriates are definite, the concentration of these compounds in commercial Valerian products, as well as teas made from these products, is unclear. More research is needed before final judgment can be made on the usefulness of Valerian tea. Until such a point is reached, use of Valerian root tea is not recommended due to the potential danger associated with any tranquilizing or CNS depressant compounds.

Common Name: Wormwood (Artemisia absinthium L.).

Synonyms: Absinthium, Absinthe, Armoise, Wermut, Wermutkraut, Old Women, St. John's Girdle, Madderwort, Mugwort, Mingwort.

Popular Medicinal Uses: Wormwood is used as a digestive tonic and diuretic as well as an emmenagogue, febrifuge, anthelmintic, and as a choleric for liver and gallbladder disorders (2, 4).

Chemical Components: Wormwood is composed of a volatile oil (comprised of alpha- and beta- thujone, and beta-caryophyllene), absinthin, anabsinthin, artabsin, artemetin, lactone compounds, inulobiose, carotene, ascorbic acid, tannings, 3,7-dioxabicyclo-[3,3,0]-octanes and pipercolic acid (4).

Physiological and Nutritional Implications of

Consumption: This herb was used to flavor the strongly addictive alcoholic beverage called absinthe. Famous absinthe addicts include Vincent van Gogh and Edgar Degas. Though this narcotic beverage has been banned in most countries, Wormwood tea is still used for its narcotic and medicinal effects. Thujone compounds make up approximately 3-12 percent of the volatile oil of

Wormwood and are believed to be responsible for the toxic effects of the herb (10). It is thought that thujone effects the same CNS receptor as the tetrahydrocannabinol in marijuana (4).

Wormwood in small doses has been shown to cause strong mental and physical debilitation and long-term or heavy use of Wormwood will cause restlessness, insomnia, nightmares, vomiting, vertigo, tremors and convulsions (4).

Leung (4) notes that the azulene compounds in Wormwood may have some anti-inflammatory and antipyretic properties which may explain the medicinal use of this highly toxic tea.

Use of Wormwood tea (or any absinthe product) should be discouraged since the only proven effects of this tea are narcotic. This herb is used as a flavoring in vermouth and alcoholic bitters, but this oil must be thujone-free.

Common Name: Yohimbe (Pausinystalia yohimbe [K. Schumann] Pierre).

Synonyms: No common synonyms.

Popular Medicinal Uses: Yohimbe is used in its native West Africa as an aphrodisiac. This herb has just recently become popular in Europe and North America.

Chemical Components: Available data on Yohimbe indicates that Yohimbe bark contains yohimbine, ajmaline, alloyohimbine, corynanthine, corynantheine, dihydrocorynantheine, pseudoyohimbine, quebrachine and tetrahydromethylcorynanthein (3). Nutrient composition of Yohimbe and Yohimbe tea is not available.

Physiological and Nutritional Implications of

Consumption: The compound yohimbine is responsible for the aphrodisiac effects of Yohimbe. This compound dilates the blood vessels of the skin and mucous membranes (10). Yohimbine has also been shown to increase reflex excitability in the sacral region of the spinal cord (10). These properties account for the herb's use as an aphrodisiac.

It has not been determined what dose of Yohimbe tea causes aphrodisiac effects, but Tyler (10) identifies

the following folk recipe: six to ten teaspoons of Yohimbe bark boiled in one pint of water for a few minutes.

The toxicity level of Yohimbe is quite significant. Yohimbe is a monoamine oxidase inhibitor and tyramine-containing foods (liver, cheeses, red wine, etc.) should be avoided, as should nasal decongestants and drugs containing phenylpropanolamine (10). This herb should not be used by people with hypotension, diabetes, heart, liver or kidney disease (10).

Duke (3) notes that the above-mentioned folk recipe has been known to cause lethargy, debility of limbs, restlessness, chills, nausea and vertigo. Psychic reactions in individuals suffering from schizophrenia have also been reported (10).

In closing, it appears obvious that use of Yohimbe should be discouraged, especially in those people suffering from the above-mentioned medical conditions.

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APPENDIX B

APPENDIX B
EVALUATION OPINIONNAIRE

OPINIONNAIRE

Please answer the following questions after reading the reference manual.

1. Did you feel the manual was complete in its presentation of the information?

YES _____ NO _____

2. Did you find the manual fair in its treatment of the subject?

YES _____ NO _____

3. Do you feel this manual will be useful in counseling patients/clients?

YES _____ NO _____

4. Is there any additional information that you would like to have included in the manual?

c 1988

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