Herbal remedies and its effects: An ultimate overview

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Abstract

Herbs have been used for thousands of years as natural medicines, natural does not always mean safe. Medicinal plants constitute a source of raw materials for both traditional systems of medicine (e.g. Ayurvedic, Chinese, Unani, Homeopathy, and Siddha) and modern medicine. All medicinal agents have potentially unexpected effects including toxicity and interactions, and herbs are no different. Nowadays, plant materials are employed throughout the industrialized and developing world as home remedies, over-the-counter drugs and ingredients for the pharmaceutical industry.

As such, they represent a substantial proportion of the global drug market. Especially in the developing country, depend on medicinal herbs as their main source of primary health care. Even though global herbal resources have a great potential as natural drugs and are of great commercial importance, they are very often procured and processed without any scientific evaluation, and launched onto the market without any mandatory safety and toxicology studies because there is no effective machinery to regulate manufacturing practices and quality standards. Policy and regulation in their use are two of the most sensitive aspects of developing and using plant-based medicines and health products. At present there is almost no policy worth its name to regulate the procurement and sale of medicinal plants in developing countries. Neither is the products derived from medicinal plants subject to control. This review highlights some of the herbal remedies and their use and effect in human and veterinary practices.

Key Words: Herbal Remedies, Natural Medicines, Human practices, Veterinary practices

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Introduction:-

Herbal remedies refer to the use of plants for the promotion of healing and maintenance of health. The use of herbal medicines originated in Egypt back in 1550 BC, yet many of their pharmacological effects remain poorly understood. Out of the estimated 800,000 plant species on Earth[1], today estimate that about 80 % of people in developing countries still relays on traditional medicine based largely on species of plants and animals for their primary health care. Herbal medicines are currently in demand and their popularity is increasing day by day. About 500 plants with medicinal use are mentioned in ancient literature and around 800 plants have been used in indigenous systems of medicine. India is a vast repository of medicinal plants that are used in traditional medical treatments[2]. They have been used since the beginning of human history. There are different traditions that use plants as remedies. Ayurveda, this Indian tradition uses herbal remedies, yoga, massage, diet and meditation. Traditional Chinese medicine, this works on similar principles as Ayurveda and uses herbs to boost or disperse qi (energy). Kampo, this Japanese tradition uses similar techniques to Chinese medicine and involves the study of herbs to help treat illness. Traditional Tibetan medicine, this uses herbal remedies as well as diet changes and therapies such as acupuncture to help treat illness. Unani-tibb, this Indian tradition has an emphasis on restoring balance by encouraging healing from within Western herbal medicine. This uses herbal remedies and focuses on the person as a whole, not the illness.

Herbal remedies contain active ingredients and may interact with other medicines or cause side-effects. Common side-effects are the unwanted but mostly temporary effects you may get after having the treatment. Side-effects of herbal remedies may include: feeling or being sick, dizziness. Increasingly, alternative therapies such as herbal products are being used in all over the world. Because herbal supplements are neither food nor drug, they escape the jurisdiction of the Food and Drug Administration (FDA) and are thus held to minimal standards. There is rising concern among consumer advocates and health care providers alike regarding lack of governmental regulation and surveillance of herbal products mainly due to the potential for endogenous toxicity and drug interactions. There have been multiple cases of toxicity in recent years, prompting more National Institute of Health (NIH) funding for appropriate investigations of the possible

efficacy or harm of these supplements. The FDA plans to have a scientifically based program established by the year 2010 to regulate the safety and labeling of these types of products. Currently, most data on use and toxicity of herbal supplements comes from surveys and anecdotal case report and much knowledge is obviously lacking.

Herbal use :-

There is little doubt that the use of herbal medicines is growing. Worldwide, the usage increases at a rate of 10-20% annually[3]. It is undeniable that plants have an important role in the development of modern medicines. More than 60–70 % of modern medicines in the world market are directly or indirectly derived from plant products. In the last few years, research has uncovered interesting and beneficial chemicals in herbs. However, herbs are not non-toxic just because they are natural. Medicinal herbs contain powerful, pharmacologically active compounds. While some herbs in common use appear to be fairly safe, all medicines, herbal or otherwise, should be used with caution. The number of reports of adverse effects of herbal medicines is now increasing due to increased use and manufacture.

Unlike conventional drugs, herbal products are not regulated for purity and potency [2]. Thus, some of the adverse effects and drug interactions reported for herbal products could be caused by impurities (e.g., allergens, pollen and spores) or batch-to-batch variability. In addition, the potency of an herbal product may increase the possibility of adverse effects.

The manufacturers of these products are not required to submit proof of safety and efficacy to the U.S. Food and Drug Administration before marketing. For this reason, the adverse effects and drug interactions associated with herbal remedies are largely unknown. Ginkgo biloba extract, advertised as improving cognitive functioning, has been reported to cause spontaneous bleeding, and it may interact with anticoagulants and antiplatelet agents. St. John's wort, promoted as a treatment for depression, may have monoamine oxidase–inhibiting effects or may cause increased levels of serotonin, dopamine and norepinephrine. Although St. John's wort probably does not interact with foods that contain tyramine, it should not be used with prescription antidepressants. Ephedrine-containing herbal products have been associated with adverse cardiovascular

events, seizures and even death. Ginseng, widely used for its purported physical and mental effects, is generally well tolerated, but it has been implicated as a cause of decreased response to warfarin. Kava, which comes from a member of the pepper family and is used in some countries to treat conditions such as anxiety and tension, is suspected to cause severe liver poisoning. Some Chinese herbal remedies have also been shown to cause serious kidney problems. If you have an adverse reaction to a herbal remedy, there is a system called the Yellow Card Scheme for reporting and recording these to the Medicines and Healthcare products Regulatory Agency (MHRA).

Common effect herbal remedies

There is a vast amount of research that has been done for herbal medicine. The following is a brief overview of some of the most commonly used herbal supplements and their potential use and side effect in human and veterinary practices. Here list of Herbals involved include Bitter orange (*Citrus aurantium),* Blackcohosh (*Actaea racemosa, Cimicifuga racemosa),* Cranberry (*Vaccinium macrocarpon),* Echinacea (*Echinacea purpurea, Echinacea angustifolia, Echinacea pallid),* Ephedra (*Ephedra sinica),* European mistletoe (*Viscum album* L.), Flaxseed and flaxseed oil (*Linum usitatissimum),* Garlic (*Allium sativum*), Ginkgo (*Ginkgo biloba*), Kava (*Piper methysticum)* and Noni (*Morinda citrifolia).*

Bitter orange (*Citrus aurantium)*

The bitter orange tree is native to eastern Africa and tropical Asia. Today, it is grown throughout the Mediterranean region and elsewhere, including California and Florida. Bitter orange oil is used in foods, cosmetics, and aromatherapy products. Bitter orange oil from the tree's leaves is called petit grain, and oil from the flowers is called neroli.

Because bitter orange contains chemicals that may speed up the heart rate and raise blood pressure, it may not be safe to use as a dietary supplement. There have been reports of fainting, heart attack, and stroke in healthy people after taking bitter orange supplements alone or combined with caffeine. People should avoid taking bitter orange supplements if they have a heart condition or high blood pressure, or if they are taking medications (such as MAO inhibitors), caffeine, or other herbs/supplements that speed up the heart rate. Due to lack of safety evidence,

pregnant women or nursing mothers should avoid products that contain bitter orange. Bitter orange oil used on the skin may increase the risk of sunburn, particularly in light-skinned people[4;5].

Blackcohosh (*Actaea racemosa, Cimicifuga racemosa)*

Black cohosh, a member of the buttercup family, is a plant native to North America. It was used in Native American medicine and was a home remedy in 19th-century America. United States Pharmacopeia experts suggest women should discontinue use of black cohosh and consult a heath care practitioner if they have a liver disorder or develop symptoms of liver trouble, such as abdominal pain, dark urine, or jaundice. There have been several case reports of hepatitis (inflammation of the liver), as well as liver failure, in women who were taking black cohosh. It is not known if black cohosh was respon-sible for these problems. Although these cases are very rare and the evidence is not definitive, scientists are concerned about the possible effects of black cohosh on the liver. Some people taking black cohosh have experienced side effects such as stomach discomfort, headache, or rash. In general, clinical trials of black cohosh for menopausal symptoms have not found serious side effects. Although concerns have been raised about possible interactions between black cohosh and various medications, a 2008 review of studies to date concluded that the risk of such interactions appears to be small. It is not clear if black cohosh is safe for women who have had hormone-sensitive conditions such as breast cancer or for pregnant women or nursing mothers.

Black cohosh should not be confused with blue cohosh *(Caulophyllum thalictroides),* which has differ-ent properties, treatment uses, and side effects than black cohosh. Black cohosh is sometimes used with blue cohosh to stimulate labor, but this therapy has caused adverse effects in newborns, which appear to be due to blue cohosh [6; 7].

Cranberry (*Vaccinium macrocarpon)*

Cranberry (*Vaccinium macrocarpon*) is a small evergreen shrub that grows in mountains, forests and damp bogs from Alaska to Tennessee. Native Americans introduced the Europeans to cranberry as a food, dye and medicine[8]. Cranberry juice has been widely used for the prevention, treatment, and symptomatic relief of urinary tract infections[9]. Another potential benefit of the use of cranberry is a decrease in the rates of kidney stone formation[10;11].

Drinking cranberry juice products appears to be safe, although excessive amounts could cause gastrointestinal upset or diarrhea. People who think they have a urinary tract infection should see a health care provider for proper diagnosis and treatment. Cranberry products should not be used to treat infection. There are some indications that cranberry should be used cautiously by people who take blood-thinning drugs (such as warfarin), medications that affect the liver, or aspirin. Cranberry juice had some effect in lowering daily fluctuations in urine pH, but this effect again was not dose-related. The effect of cranberry juice on urine pH persisted throughout the experimental period (i.e., the kidney did not compensate for changes in pH). Side effects included weight gain and increased frequency of bowel movements.

Echinacea (*Echinacea purpurea, Echinacea angustifolia, Echinacea pallid)*

There are nine known species of echinacea, all of which are native to the United States and southern Canada. The most commonly used, *Echinacea purpurea*, is believed to be the most potent. Echinacea remains a popular supplement used as an immunostimulant in the prevention and treatment of infection. Three of these are typically seen in herbal preparations: *Echinacea purpurea*, *Echinacea angustifolia*, and *Echinacea pallida*. Common preparations consist of freshly pressed or ethanolic extracts of the roots, leaves, and flowers as well as dried portions of the plants. Echinacea may increase phagocytosis and promote lymphocyte activity leading to increased production of TNF, may have antiviral activity.

When taken by mouth, echinacea usually does not cause side effects. However, some people experience allergic reactions, including rashes, increased asthma, and anaphylaxis (a life-threatening allergic reaction). In clinical trials, gastrointestinal side effects were most common.

People are more likely to experience allergic reactions to echinacea if they are allergic to related plants in the daisy family, which includes ragweed, chrysanthemums, marigolds, and daisies. Also, people with asthma or atopy (a genetic tendency toward allergic reactions) may be more likely to have an allergic reaction when taking Echinacea[12;13]. Side effects that have been observed with administration of Echinacea are generally mild and uncommon. Infrequent adverse effects include abdominal upset, nausea, unpleasant taste, and dizziness. Rarely seen effects are

anaphylaxis, exacerbation of asthma, and angioedema[14]. Another study of human sperm and oocytes showed that Echinacea at high concentrations had adverse effects on oocytes and suggested that Echinacea damages reproductive cells[15].

Ephedra (*Ephedra sinica)*

Ephedra is an evergreen shrub-like plant native to Central Asia and Mongolia. The principal active ingredient, ephedrine, is a compound that can powerfully stimulate the nervous system and heart. Ephedra has been used as a natural medicine for thousands of years by numerous cultures with very little concern about toxicity. Its most recent popularity is related to its purported "weight loss" or "performance enhancing" attributes. Ephedra acts directly and indirectly to stimulate the sympathetic nervous system.

In 2004, the FDA banned the U.S. sale of dietary supplements containing ephedra. The FDA found that these supplements had an unreasonable risk of injury or illness particularly cardiovascular complications and a risk of death. The ban does not apply to traditional Chinese herbal remedies or to products like herbal teas regulated as conventional foods. Between 1995 and 1997, the FDA received more than 900 reports of possible ephedra toxicity. Serious adverse events such as stroke, heart attack, and sudden death were reported in 37 cases. Using ephedra may worsen many health conditions such as cardiovascular disease, kidney disease, and diabetes. Ephedra may cause seizures in otherwise healthy people as well as in people with seizure disorders. Taking ephedra can also result in anxiety, difficulty urinating, dry mouth, headache, heart damage, high blood pressure, irregular heart rhythms, irritation of the stomach, kidney stones, nausea, psychosis, restlessness, sleep problems, and tremors. Women who are pregnant or breastfeeding and children should avoid taking ephedra. Ephedra use may lead to serious health problems when used with other dietary supplements or medicines. Combining ephedra with caffeine increases the risk of potentially serious side effects[16;17].

A decade-old report described the autopsy findings in three individuals with intracerebral hemorrhage and positive toxicology testing for ephedrine; however, one had hypertensive cerbrovasular disease and the other had a demonstrable ruptured aneurysm[18]. Direct toxicity, with altered renal function and demonstrable kidney lesions related to ephedrine use, has never been demonstrated. Urinary retention,

occurring as a consequence of drug overdose, was occasionally reported [19; 20] Ephedrine and pseudoephedrine share properties with cocaine and with the amphetamines because they: (1) stimulate receptors directly, and (2) also cause the increased release of norepinephrine. Chronic exposure to abnormally high levels of circulating catecholamines can damage the heart. This is certainly the case with cocaine and methamphetamine[21; 22].

European mistletoe (*Viscum album* L.)

European mistletoe is a semiparasitic plant that grows on several types of trees in temperate regions worldwide. Where the term "mistletoe" is used in this summary, it refers to European mistletoe. (European mistletoe is different from American mistletoe, which is used as a holiday decoration.) Raw, unprocessed mistletoe is poisonous. Eating raw, unprocessed European mistletoe or American mistletoe can cause vomiting, seizures, a slowing of the heart rate, and even death. American mistletoe is unsafe for medicinal use. In countries where commercial mistletoe is available by injection, such as Germany, those extracts are considered to be generally safe when used according to product directions and under the supervision of a health care provider. Injected mistletoe extract may cause itching or redness in the area of the injection. Less commonly, side effects may include more extensive skin reactions, low-grade fevers, or flu-like symptoms. There have been very rare reports of more serious allergic reactions, such as difficulty breathing. Because mistletoe has not yet been proven to be a safe and effective cancer treatment, it should not be used outside of clinical trials [23; 24].

Flaxseed and flaxseed oil (*Linum usitatissimum)*

Flaxseed is the seed of the flax plant, which is believed to have originated in Egypt. It grows throughout Canada and the northwestern United States. Flaxseed oil comes from flaxseeds. Flaxseed and flaxseed oil supplements seem to be well tolerated. Few side effects have been reported. Flaxseed, like any supplemental fiber source, should be taken with plenty of water; otherwise, it could worsen constipation or, in rare cases, even cause intestinal blockage. Both flaxseed and flaxseed oil can cause diarrhea. The fiber in flaxseed may lower the body's ability to absorb medications that are taken by mouth. Flaxseed should not be taken at the same time as any conventional oral medications or other dietary supplements.

Because flaxseed is high in fiber, it

may cause minor adverse side effects related to the gastrointestinal system. Common side effects when using flaxseed include bloating, abdominal pain, gas, diarrhea, constipation, indigestion and nausea. Starting flaxseed at a low dose and gradually increasing intake may prevent adverse digestive problems. It is possible to experience a severe allergic reaction to flaxseed, even if you have not developed problems in the past. According to Drugs.com, symptoms of an allergic reaction to flaxseed include hives, itching, swelling, difficulty breathing, wheezing, trouble swallowing and a blue-gray color to the skin. Diabetics may experience adverse side effects when taking flaxseed. The supplement can potentially increase blood sugar levels or interact with certain medications for treating diabetes. The National Institutes of Health cautions diabetics to consult their doctor before beginning supplementation with flaxseed or flaxseed oil[25]. Flaxseed may increase the risk of bleeding and cause easy bruising, especially when taken at high doses. Rarely, bleeding may be significant. Tarry, black or bloody stools and vomiting blood are symptoms of gastrointestinal bleeding. Flaxseed may also increase the risk of bleeding in the brain, a potentially fatal adverse reaction to the supplement. Speech or vision changes, weakness or numbness in the extremities, and severe headaches may indicate brain bleeding. The National Institutes of Health states that flaxseed may have estrogen-like effects in the body. This estrogenic activity may cause adverse effects in women with polycystic ovary syndrome, endometriosis, uterine fibroids or hormone-sensitive cancers, such as cancer of the ovary, uterus or breast.

Garlic (*Allium sativum*)

Garlic is the edible bulb from a plant in the lily family. It has been used as both a medicine; prevention of atherosclerosis, reduction of high blood pressure, immune system stimulation, and treatment of hyperlipidemia and a spice for thousands of years. Garlic may act as a HMG-CoA reductase inhibitor to reduce serum cholesterol, may promote smooth muscle relaxation and vasodilation by activating production of endothelium derived relaxation factor, may have antithrombotic effects leading to decreased platelet aggregation and increased fibrinolytic activity. According to the Food and Drug Administration (FDA), chopped garlic and oil mixes left at room temperature have the ability to result in fatal botulism food poisoning[26]. Garlic appears to be safe for

most adults. Side effects include breath and body odor, heartburn, upset stomach, and allergic reactions. These side effects are more common with raw garlic[27]. Garlic can thin the blood (reduce the ability of blood to clot) in a manner similar to aspirin. This effect may be a problem during or after surgery. Use garlic with caution if you are planning to have surgery or dental work, or if you have a bleeding disorder. Garlic has been found to interfere with the effectiveness of saquinavir, a drug used to treat HIV infection. Its effect on other drugs has not been well studied[28].

Allergic reactions to garlic have also been reported in the literature. Garlic allergy can manifest as occupational asthma, contact dermatitis, urticaria, angioedema, rhinitis, and diarrhea. A 35-year-old woman experienced several episodes of urticaria and angioedema associated with ingestion of raw or cooked garlic, as well as urticaria from touching garlic.

Garlic has antiplatelet properties, and can increase the risk of bleeding when used together with drugs with antiplatelet and anticoagulant effects, such as aspirin, clopidogrel, ticlopidine, dipyridamole, heparins, and warfarin [29] increased international normalized ratio (INR), has been reported when garlic was added to warfarin [30]. Garlic supplements that contain allicin can induce the cytochrome P450 3A4 (CYP 3A4) isoenzyme and can result in clinically important decreases in concentrations of drugs metabolized by this enzyme. This interaction was proven with saquinavir [28].

Ginkgo (*Ginkgo biloba*)

The ginkgo tree is one of the oldest types of trees in the world. Ginkgo seeds have been used in traditional Chinese medicine for thousands of years and cooked seeds are occasionally eaten. It is purported to improve blood flow to the brain and to improve peripheral circulation. It is promoted mainly to sharpen mental focus in otherwise healthy adults as well as in those with dementia. Other conditions for which it is currently used are diabetes-related circulatory disorders, impotence, and vertigo. Competitive inhibition of platelet–activating factor which decreases blood viscosity leading improved microcirculatory blood flow

Side effects of ginkgo may include headache, nausea, gastrointestinal upset, diarrhea, dizziness, or allergic skin reactions. More severe allergic reactions have occasionally been reported. There are some data to suggest that ginkgo can increase bleeding risk, so people who take

anticoagulant drugs, have bleeding disorders, or have scheduled surgery or dental procedures should use caution and talk to a health care provider if using ginkgo [31]. Fresh (raw) ginkgo seeds contain large amounts of a chemical called ginkgotoxin, which can cause serious adverse reactions—even seizures and death. Roasted seeds can also be dangerous. Products made from standardized ginkgo leaf extracts contain little ginkgotoxin and appear to be safe when used orally and appropriately. "Ginnan" food poisoning, a toxic syndrome associated with ingestion of 50 or more GB seeds, can result in loss of consciousness, tonic/clonic seizures, and death [32]. Spontaneous intracerebral hemorrhage occurred in a 72-year-old woman who had been taking GB 50 mg three times daily for 6 months [33].

Kava (*Piper methysticum)*

Kava is native to the islands of the South Pacific and is a member of the pepper family. Kava has been used as a ceremonial beverage in the South Pacific for centuries. Kava has a long history of traditional use for the treatment of symptoms related to anxiety, stress and nervous restlessness. Controversial, may enhance GABA binding in the amygdale. Kava has been reported to cause liver damage, including hepatitis and liver failure (which can cause death). Kava has been associated with several cases of dystonia (abnormal muscle spasm or involuntary muscle movements). Kava may interact with several drugs, including drugs used for Parkinson's disease. Long-term and/or heavy use of kava may result in scaly, yellowed skin. Avoid driving and operating heavy machinery while taking kava because the herb has been reported to cause drowsiness[34; 35].

Kava dermatopathy in association with traditional use of kava is well described in the literature [36]. In addition, two cases of dermopathy have recently been associated with commercially available kava products[37]. Chronic use of the kava beverage has been associated with a wide range of abnormalities. A study [38] of an Australian Aboriginal community revealed malnutrition and weight loss associated with kava use. Red blood cell volume increased in proportion to kava use, whereas bilirubin, plasma protein, platelet volume, B-lymphocyte count and plasma urea were inversely proportional to kava consumption. Although these values were not outside the normal range, it was hypothesized that malnutrition or reduced hemoglobin turnover might explain these observations. Other findings included hematuria and

difficulty acidifying and concentrating the urine, suggesting an effect on the renal tubules and increased serum transaminases and increased high density lipoprotein cholesterol, suggesting some effect on the liver. Alcohol appears to at least add to the hypnotic effect of kava in mice and was also observed to increase the lethality of kava [39]. These findings may be of importance because some Australian aboriginal populations now frequently consume kava with alcohol. Concomitant use of barbiturates, melatonin and other psychopharmacological agents might potentiate the effects of kava as well [40]. The hepatotoxic potential of kava [38] also raises concerns about concomitant alcohol use.

Noni (*Morinda citrifolia)*

Noni is an evergreen shrub or small tree that grows throughout the tropical regions of the Pacific Ocean, from Southeast Asia to Australia and especially in Polynesia. Noni has been traditionally used in Polynesia as a dye.

Noni is high in potassium. People who are on potassium-restricted diets because of kidney problems should avoid using noni. Several noni juice manufacturers have received warnings from the FDA about making unsubstantiated health claims. Although there have been few reported side effects from using noni, its safety has not been adequately studied. There have been reports of liver damage from using noni. It should be avoided if you have liver disease because it contains compounds that may make your disease worse [41].

Conclusion:-

Plant materials are used throughout the developed and developing world as home remedies, in over-the-counter drug products, and as raw material for the pharmaceutical industry, and they represent a substantial proportion of the global drug market. When used prudently, herbal medicines have a place in the control of certain ailments, diseases and maintenance of health. From the above discussion, findings by many researchers have reinforced the idea that the use of natural herbal medicines may not be without risk. There is no rational reason behind the tendency to equate "natural" with "harmlessness." The fact that something is natural does not necessarily make it safe or effective. More research on adverse reactions on locally available herbal preparations should be encouraged and public education on the good and bad effects of herbals need to be emphasized. As doctors and researchers continue to explore

the safety and effectiveness of herbal medicines, more is learned about both their promises and their pitfalls. At the same time, legislators at the national level should continue to press for effective laws to protect consumers from potentially harmful herbal drugs. These herbal drugs need to be analyzed in the same way as any modern drug that is with randomized controlled clinical trials.

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