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Traditional Chinese Medicines in Present Era: A Review

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Review Article

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ABSTRACT

Traditional Chinese medicines are one of the most ancient medicines which are in use since long back. It has potential to cure large variety of diseases. Different variety of herbs as well as techniques such as acupuncture, moxibustion etc. are being used nowadays. Scientist are continuously looking forward to develop extracts from such plants using different ancient formulas to cure dreadful disease such as cancer and many more. In this review, we have tried to include few such discoveries in field of Traditional Chinese Medicines made by scientists all around the world.

INTRODUCTION

Traditional Chinese Medicine is one of the oldest therapy (around 2500 years) used for curing various types of diseases. With a rich history in curing disease TCM is one of the main target of researchers for discovery of new drugs because of its herbal nature, negligible side effects and compatibility in human being in comparison to other western medicines used widely now a days. A large number of theories and many formulas have been made till date in TCM for cure of diseases and many such formulas have their root long back in ancient times ^[1-9]. Some are single herb treatment while other has multicomponent herbal derivatives as constituents of medicine.

Diagnosis and treatment of disease using TCM is based on five essential tools. They are:

Acupuncture: It is most widely used method in TCM. In this method, needles are pierced at points of energy flow along meridians in human body.

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Diagnosis of energy: It is used for examining disease symptoms by detecting points on wrist, palms, tongue, skin and ear.

Chinese Pharmacology: It uses various herbal plants, animals and minerals for treatment of various diseases.

Massage: It is done on muscle-tendon system, meridians and acupuncture points, joints.

Medical gymnastics: It is a method of cure in which patients perform exercise, along with proper breathing.

Along with these methods two other tools called cupping and moxibustion are also used. In cupping, cups are applied over patient's skin after heating air inside cup. In moxibustion acupuncture points are heated with heat or torch hub. Usually mugwort is used for heating purpose in moxibustion ^[10].

After discovery of Artemesin-drug used for treatment of malaria by Prof. Youyou Tu et al. from *Artemesia annua* (qinghao), TCM again come in light of scientific world of new drug discovery. Since then, many compounds such as ephedrine, digoxin, tripterygium glycosides and burberin etc. have been extracted from Chinese herbs. These herbs along with their high biological activity are very good for clinical practices.

In this review we have tried to give an overview of various therapies and medicines in Traditional Chinese Medicine for cure of various types of disease. A brief account of problems and limitation with TCM would also be discussed.

ACUPUNTURE

Acupuncture is one the most widely used method of curing disease under TCM. It has been reported that acupuncture could be beneficial in treatment of many diseases. Chronic pains, neurological deficits, back pains are few common disease cured by acupuncture therapy ^[11-14].

TCM in female reproductive therapy

It have been found that TCM have a wide range of use in treatment of gynaecological and infertility problems. According to a case report 21 infertile female patients were administered with Traditional Chinese Medicine with and without acupuncture and give a surprising result. 66.7% i.e. 14 out of 21 pregnant cases were reported after two year of treatment and other 7 were advised to prolong medication. Later out of these 7 cases 5 more successful case was reported ^[15].

It have been found that even after the menopause in some Chinese women's menopausal symptom such as sweating, hot flushes and emotional manifestations exist as result of lower oestrogen concentrations. Research reported that when a combination of two herbs named *Angelica sinensis* and *astragali* were administered to post-menopausal subjects under GCP (Good Clinical Practice Regulation) many symptoms were controlled ^[16].

According to other researchers it have been found that Chinese medicines have potential to cure female infertility problems by improving reproductive outcomes during in vivo fertilization, curing polycystic ovarian syndromes, endometriosis and relieving mental stress ^[17].

Extracts of herb *Paris polyphylla* suppress level of estrogen-related receptor (ERR)-alpha activator and peroxisome proliferator-activated receptor-gamma coactivator (PGC)-1alpha and controls ovarian cancer ^[18].

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TCM in Generalized Anxiety Disorder (GCM)

Acupuncture, one of the complementary and alternative medicine which is a now a characteristic component of TCM have a great effect in controlling Generalized Anxiety Disorder. Symptoms of GCM include excessive, unexplained, uncontrollable and most of the times irrational worry regarding day to day activity. In general, antidepressants and anxiolytics used to GCM take long time in their action and cause various side effects. Acupuncture has proved to be good alternative in comparison to medication. Its efficacy in curing disease was same as that of medicines and it reported negligible side effects [19].

One another Chinese medicine named Yiqiyangxin when administered to GCM patients along with cognitive therapy produces effective response which was measured by Zung Self-rating Anxiety Scale (SAS), Hamilton Anxiety Scale (HAMA) [20]. Gamisoyo-San, one other CM also have been reported to show effective impact on GCM [21].

TCM in Cardiovascular diseases

Atherosclerosis or Peripheral arterial disease is one of the main causes for cardiovascular disease. As per data it causes second most number in deaths around the world after cancer. In 2010 cardiovascular diseases caused 32% of all deaths [22]. According to TCM Atherosclerosis is associated with Chinese theory of “pain due to obstruction”. It has been diagnosed simultaneous application of treadmill exercise and moxibustion therapy is used for removal of blockages in arteries. Studies suggested that TCM in combination with western medicine therapy is a promising cure for heart related diseases [23-26].

A well-known Chinese herb Chuanxiong Rhizoma or Chuanxiong is used since several decades in treatment of cardiovascular diseases. Chuanxiong is used for activating circulation of blood flow and treatment of various types of Thromboembolic Diseases. According to a study it is revealed that a classical formula of Sanhe Decoction (SHD) which is a combination of 7 herbs is used for treatment of gastrointestinal as well as cardiovascular diseases. Seven herbs include Lilli Bulbus, Salvia Miltiorrhiza, Alpinia Officinarum Rhizoma, Amomum Villosum, Santal Albi Lignum, Linderaggregata and Cyperus Rotundus. Among them Radix Salvia and Lilli Bulbus is used for treatment of cardiovascular disease and Alpiniae Officinarum Rhizome and Fructus Amomi cures gastrointestinal diseases and Santal Albi Lignum is useful in treating both diseases [27].

Another medicine named Radix Salvia miltiorrhiza derived from Salvia miltiorrhiza roots also proved to be helpful in controlling atherosclerosis [28].

Uncaria rhynchophylla, also known as Chinese Gou Teng belongs to Rubiaceae family and useful for treatment of cardiovascular diseases due to presence of high content of indole alkaloids and other active compounds such as terpenoids, phenols and flavonoids [29].

TCM in cancer therapy

Cancer is one of the most dreadful diseases of today's era. Nowadays therapy used for cancer is mostly based on radiology or chemotherapy. Efforts are always been made to find new alternatives for these therapies as side effects of anticancer drugs reduces the immunity as well as physical quality of an individual suffering from disease.

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Traditional Chinese medicine have great potential to cure those types of cancer which can't be cured using western medicine such as hepatocellular carcinoma and pancreatic carcinoma by its concept of "holistic therapy", "in appositive attack evil" and "one tumor coexistence".

TCM are very specific in their action in detection and action on tumours. They not only destroy cancerous cells but also creates unfavourable environment which inhibits growth of further cancerous cells [30].

A Chinese herbal medicine named LANGDU, is derived from roots of *Euphorbia prolifera* is used as an anticancer drug for treatment of various types of cancer including breast cancer [31]. *Panax ginseng*, a Chinese herb is used in is extraction of around 40 different kinds of ginsenosides. Among them, Ginsenoside Rg3 has a great potential for treating cancer of all types and in present days it is one of the most burning topic for researchers [32-35].

Yang Wei Kang Liu, a traditional Chinese formula when used in combination with chemotherapy, increases survival of patients suffering from gastric cancers even in their fourth stage [36,37].

Other fields of TCM –An Overview

Phenolic glycosides derived from extracts of *Liparisodorata*, an herbaceous plant belonging to orchid family and found abundantly in Western China is have reported anti-diabetic as well as anti-inflammatory action [38,40]. Research suggests that Moxibustion have strong anti-inflammatory effect in adjuvant arthritis. This effect is due to Transient Receptor Potential Vanilloid sub type 1 or TRPV1 [41,42].

Pleurotus eryngii, an edible mushroom which is used extensively in North Africa, Asia and Europe have many therapeutic values and extracts from it have reported anticancer, antimicrobial, antiviral, antioxidant, immunomodulating, anti-allergic, hypolipidemic and estrogen like activity. Table 1 shows various various therapeutic effects and bioactive compounds of *Pleurotus eryngii* [43-46]. Music therapy is mentioned in China's oldest medical text named "The Yellow Emperor's Classic of Medicine". This therapy is also based on five-element theory, a foundation theory of TCM. As per this theory "jiao" note belongs to wood element, is spring's sound and controls proper function of liver. "Zhi" note is related to fire element, is sound of summer and controls proper heart function. Other notes are shang, gong and yu note belonging to metal, earth and water element and controls proper function of lung, spleen and kidney. Music Therapy has been useful in rehabilitation of children's suffering from Cerebral Palsy.

Creative music therapy, individualized music therapy, Orff music therapy, using RBT music therapy etc. are various forms of therapy used. It has been observed that a better cooperation was observed by patients for music therapy in comparison to other western therapies [47-50]. Diabetes is one of the most prevalent diseases which is affecting a large part number of population in these days. In diabetes depression is one of the serious complications which affect patient's quality of life. As per estimate it is expected that by 2050, 25% of diabetes patients would be under depression [51]. According to a recent research by Tang et al proved that Wu Ling Capsule improves depression in type 2 diabetes patients [52-54]. Wu Ling capsule is a kind of Chinese medicine with its main ingredient as Wu Ling Powder. It was first proposed to cure some of the symptoms of depression with insomnia and anxiety disorders. Presently, it has been used only as an experimental drug and has shown very promising results.

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Source	Bioactive compound	Therapeutic effects
Fruiting body	Polysaccharide	Anticancer activity/ Antioxidant/Immuno- Modulating effects/ Hypolipidemic/Antimicrobial activity
	Polysaccharide protein	Anticancer activity
	Phenolic	Antioxidant
	Eryngin	Antimicrobial activity
	Laccase	Antiviral activity
	Acidic glycosphingolipids	Immuno-modulating effects
	Water extracts	Immuno-modulating effects/ Hypolipidemic
	Methanol extracts	Antioxidant
	Ethanol extracts	Antimicrobial activity/Anti- Allergic Property, Estrogen like activity
Mycelial	Water extracts	Antiviral activity
Sporocarp	Pentacyclic triterpenoid	Anticancer activity
Culture medium	polysaccharide	Anticancer activity/Antioxidant
Solid culture	Eryngiolide A	Anticancer activity

Table 1: Therapeutics effects and bioactive compounds of *Pleurotus eryngii*.

A research by **Kang X**, et al. determines the effect of two kidney tonifying chinese medicine recipe **Zuogui Wan (ZGW) and Yougui Wan (YGW)** on serum corticosterone (CORT), learning and memory ability and expression of learning and memory related signal transduction molecules in aging rats. As per their findings, memory as well as spatial learning ability of was improved. Effects of ageing were also improved in senile rats as a result of down regulating of high corticosterone level and up-regulation of signal transducing proteins [54-57].

Herba swertia, also known as Dang Yao is a traditional medicine used for cure of jaundice due to dampness and heat, hydrochoandric pain, diarrhoea and loss of appetite. Recent research suggests that Herba swertia can be used for treatment of gastrointestinal disorders in vivo. It has been suggested that Herba swertia have similar affect like domperidone on gastrointestinal system and stimulates contraction of gastric muscles and leads to inhibition of dopamine effects on postsynaptic cholinergic neurons. Thus, this herb proved to be a promising cure for treatment of gastrointestinal disorders such as gastric emptying, pepsin activity, mobility of ileum, intestinal propulsion [58-61].

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Combination of several herbs under Chinese herbal formula proved to be useful in treatment Alzheimer's disease (AD). As AD is a multitarget disease and involving several signalling pathways a combination of drugs under Chinese herbal formula is effective cure [62].

Liuwei Dihuang Wan, a traditional Chinese formula is useful for treatment of Osteoporosis. Liuwei Dihuang Wan is a collection of six herbs named *Rehmannia glutinosa* Libosch. (Family: Scrophulariaceae), *Cornus officinalis* Sieb. (Family: Cornaceae), *Dioscorea opposita* Thunb. (Family: Dioscoreaceae), *Alisma orientale* (G. Samuelsson) Juz (Family: Alismataceae) *Poria cocos* (Schw.) Wolf (family: Polyporaceae) and *Paeonia suffruticosa* Andrews (family: Paeoniaceae) [63]. As per administration of Liuwei Dihuang Wan, bone mineral density (BMD), bone mineral content and antioxidant enzymes in blood level increased and Calcium and Phosphorus level in decreases [64,65]. Isoliquiritigenin, a chalconoid compound which is an extract of Chinese herbal medicine named Licorice proved to be a cost effective and potential natural agent for treatment of angiogenesis-dependent diseases [66].

Various neurological disorders such as epilepsy, facial paralysis and apoplexy pains are treated by using Asian scorpions such called *Buthus martensii* Karsch. Extracts from scorpion its venom as well as its body parts are used for making medicine [67-70].

Challenges faced by TCM

TCM proved to have lot of advantages over western medicines in curing various diseases. But on the dark side few demerits are also associated with the TCM's. Due to the presence of large number of components in TCM it is very difficult for extraction of those compounds which are bioactive and have high pharmacological activity [71-76]. Due to its slow action time, it would not be possible to implement TCM for quick relief in case of serious injuries.

One of the major problems of TCM is its dose specificity. Dose specificity for each and every individual differs. Thus, it is quite difficult to adjust different quantity for different individuals. There are several endangered plants that have very good therapeutic activity and presence of bioactive compounds. If these plants are used further for production of drugs, they may lead to extinction.

CONCLUSION

Traditional Chinese medicines are great source of medication for wide range of diseases. Its side effects are negligible as compared to western medicines. Irrespective of these advantages a lot of work is to be done on its dose fixation and extraction process. Efforts are required by government agencies to support institutions and promote development of this medication process.

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