

ROLE OF AYURVEDA MEDICINE WITH RELEVANCE OF LIVER CANCER

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Article Info: Received 10 February 2020; Accepted 24 March 2020

DOI: <https://doi.org/10.32553/ijmbs.v4i3.1067>

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Conflict of interest: No conflict of interest.

Abstract

Ayurveda, the oldest Indian indigenous medicine system of plant drugs is known from very early times for preventing or suppressing various tumors using these natural drugs. And nowadays scientists are keener to researches on complementary and alternative medicine for the management of cancer. In Ayurvedic concept, according to 'Charaka' and 'SushrutaSamhitas' cancer is described as inflammatory or non-inflammatory swelling and mentioned either as 'Granthi' (minor neoplasm) or 'Arbuda' (major neoplasm). The nervous system (Vata or air), the venous system (Pitta or fire) and the arterial system (Kapha or water) are three basics of Ayurveda and very important for normal body function. In malignant tumors all three systems get out of control (Tridoshas) and lose mutual coordination that causes tissue damage, resulting critical condition. Tridoshas cause excessive metabolic crisis resulting in proliferation.

Key words: Cancer, Charaka, Arbuda, Herbal drugs, TCM.

Introduction

Liver is a vital organ for chayapachaya (metabolism) of consumed food. Acharyas have opined about the genesis of Yakrit from RaktaDhatu as Ayurveda narrates the basic principles including Panchamahabhoota, Tridosha, Saptadhatu, etc., in view of embryology and organogenesis. The various organs generate from different combinations of mauabhuta and specially Raktadhatu (Blood tissue) in the context of liver.[1-3]

The liver is a well-known organ for Ayurveda. In Vedas, it is named as "Takima" or "Yakna". Synonyms like Kalakhanda, Jyotisthana, Yakritkhanda, Yakritpinda, Raktadhara and Raktashaya are found in the ancient literature for liver.[4]

Sushruta explains that foetal nutrition usually depends on Ahara Rasa, categorized under maternal factors and Vayu present in Jyotisthana, responsible for cell division. The Ahara Rasa is first received by Jyotisthana, which further nourishes the whole body. Therefore, Jyotisthana is perceived as "liver".[5]

1.1 Ayurveda concept

According to Ayurveda, the Rasa Dhatu, which comes to Yakrit and Pleeha, gets colored by Ranjakagni. But, this is too difficult to correlate with modern science. In the term of modern science, it can be matched with hematopoiesis. Hematopoiesis is carried out by Yakrit only in intrauterine life. However, after birth, this is carried out by red bone marrow. In some pathological conditions, the liver may help in forming blood cells with red bone marrow. Actually, the function of Yakrit [6] is metabolism of fats, proteins, etc., or storage of certain vitamins, nutrients or glycogen

and not coloring the chyle. On the whole, the term of Ranjakagni related to the liver is too difficult to match with any of the components present in the liver.[7]

1.2 Scope for therapeutic Research

From the above it is clear that embryological origin of liver is blood tissue as per Ayurveda as well as modern science. Hence, in case of any liver disorder, the baseline treatment for blood disorders may be adopted. However, the present description and correlation of ancient thought opens a new window on the applicability of this concept in management of hepatic disorders for modern medicine and for the 20th century Ayurveda physicians to evaluate the efficacy of drugs acting on Raktavahasrotasa, like Sariva,[8]Manjishtha, Triphala, on the parameters of modern science for evidence based claim.[9]

Generally, the description of herbal medicine is the use of medicinal herbs, preparation made from a plant or plants, to prevent and treat diseases and ailments or to promote health and healing. However, it is important to distinguish "herbal medicine" and "herbal production", which is often overlooked [10]. There is a significant distinction between the herbal medicine and the herbal production, both are the plant-based remedies used in the practice. Herbal production is the conventional medicine with definite ingredient(s) and definite pharmacological effects when the "plant drug" is for medical use. Whereas, the use of herbs in herbal medicine divorced from the context of the so-called "scientific information" and thus not as strongly scientifically validated is a specific discipline of herbal medicine that provides the therapeutic understanding of the medicinal use of herbs [11-13].

1.3. Ayurveda and Cancer:

The modern cancer therapy which is known to be burdened by drug-induced toxic side effects hoping for a perfect cure of disease from the complementary and alternative medicine system. The main goal of Ayurvedic therapy is to find the ultimate cause of an illness while the therapeutic approach of Ayurveda is divided into four categories as Prakritisthapanichikitsa (health maintenance), Rasayanachikitsa, (restoration of normal function), Roganashanichikitsa (disease cure) and Naishthikichikitsa (spiritual approach).[14] Commonly used herbal decoctions reported in Ayurveda are made of multiple herbs possessing great potential for a cancer cure; scientifically these formulations work on multiple biochemical pathways and influence different organ systems all together and nourish the body as a whole by supporting body's defence systems.[15]

1.4 Herbs Used for Cancer:

Herbs help total healing, reduce the side effects and cancer-associated complications.[16] *Andrographispaniculata*, *Annonaatemoya*, *Phyllanthusniruri*, *Piper longum*, *Podophyllumhexandrum*, *Tinosporacordifolia*, *Semecarpusanacardium*, *Vitisvinifera*, *Baliospermummontanum*, *Madhucaindica*, *Pandanusodoratissimum*, *Pterospermumacerifolium*, *Raphanussativus*, *Barleriapronitis*, *Prosopis cineraria*, *Amorphopalluscampulatus*, *Oxoxylumindicum*, *Basellarubra*, *Flacourtiaromantchi*, *Moringaoleifera*, *Ficusbengalensis*, *Curcuma domestica*, *Allium sativum*, *Calotropis gigantean*, *Daturametel*, *Hygrophilaspinoso*, *Juniperusindica*, *Moringaoleifera*, *Nigella sativa*, *Picrorrhizakurroa*, *Rubiaccordifolia*, etc. are various plants having scientific evidence of anticancer property. Nowadays, many herbs are under clinical studies and being investigated phytochemically to understand their anticancer potential. More than 25% of drugs used during the last 20 years are directly derived from plants, while the other 25% are chemically altered natural products. Nine plant-derived compounds including vinblastine, vincristine, etoposide, teniposide, taxol, navelbine, taxotere, topotecan and irinotecan have been approved for use as anticancer drugs. 10-hydroxycamptothecin, monocrotaline[17], d-tetraandrine, lycobetaine, indirubin, colchicinamide, curcumol, curdione, gossypol and homoharringtonine are few more plant-derived compounds of high hope.[18,19]

Each herb contains multiple active principles that often operate synergistically producing therapeutic benefits and lowering the risks of adverse effects; and avoids the need for supplemental therapy to manage cancer cachexia. Now it is important to raise awareness and encourage implementation of Ayurvedic therapies for combating

cancer and suggest an integrated approach in tumor management and treatment.[20]

2. LITERATURE REVIEW:

Curcumin (diferuloylmethane), a compound extracted from *Curcuma aromatica* widely used as a spice and coloring agent in food, possesses potent antioxidant, anti-inflammatory and anticarcinogenic properties. [21]. Herbal drugs have become increasingly popular and their use is wide-spread.

Herbal medicines have been used in the treatment of liver diseases for a long time so the maintenance of a healthy liver is essential for the overall well being of an individual. Liver injury induced by toxins is more common nowadays. Herbal remedies are focused in the pharmaceutical industry to evolve a safe route for liver disorders. Therefore, hepatoprotective natural products are *Andrographispaniculata*, *Chamomile capitula*, *Silybummarianum*, *Cocciniagrandsis*, *Flacourtiaindica*, *Wedeliacalendulacea*, *Annonasquamosa*, *Prostecheamichuacana*, *Ficuscarica*, *Lepidiumsativum*, *Sargassumpolycystum*, *Solanumnigrum*, *swertiachirata*, *Phyllanthusemblica*, *Curcuma longa*, *Picrorrhizakurroa*, *Azadirachtaindica*, *Aeglemarmelos*, *Cassia roxburghii*, *Orthosiphonstamineus*, *Jatropha curcas*, *Foeniculumvulgare*, *Trigonellafoenumgraecum*, *Eclipta alba*, *Garciniamangostana*[22]. The present review is aimed at compiling data about *Curcuma Longa* (Turmeric) and Green Tea (*Camellia sinesis*).

Tea has been used as both a drink and a medicine for approximately 5000 years in China. Historical uses of tea are as a stimulant, an astringent for clearing phlegm, and as a digestive aid. Tea contains a wide assortment of bioactive constituents, most of which are contained in two groups, alkaloids and polyphenols. Examples of alkaloids found in tea include caffeine, theobromine, and theophylline.[23] These alkaloids provide the stimulant effects of tea and figure prominently in the experience of tea drinking, although they are not thought to be central to tea's medicinal effects. The polyphenols found in all tea give it its astringent, somewhat bitter flavor. The hepatoprotective and other health effects of green tea are believed to be chiefly dependent on the polyphenol content. The polyphenols contained in teas are classified as catechins, which are considered to be bioflavonoids, which in turn is a subcategory of the larger group of polyphenols. Green tea contains six primary catechin compounds: (+)- catechin, gallocatechin, epicatechin, epigallocatechin, epicatechingallate, and epigallocatechingallate. [24]

3. METHODOLOGY:

3.1 TCM aims to restore the balance of your Qi (pronounced chee). TCM practitioners believe that Qi is the

flow of energy in your body and is essential for good health.

Yin and yang refer to different qualities of Qi. When all of the yin and yang aspects of Qi are in harmony with one another, there is health, wellbeing and peace. Illness is due to a disturbance of the balance between yin and yang. Chinese herbalists use plants according to how they affect a part of the body or energy channel.[25]

TCM includes:

- Acupuncture
- Massage therapy
- Herbal remedies
- Traditional breathing and movement exercises called qi gong (pronounced cheegoong) movement exercises called tai chi (pronounced tie chee)

TCM uses hundreds of medicinal substances. Most of these are plants, but there are also some minerals and animal products.

3.2 Ayurvedic Medicine:

Ayurvedic medicine believes that health problems happen when your mind, body and spirit are out of balance. Ayurvedic practitioners believe we are made up of 3 elements known as doshas. These are:

- Air and space (vatadosha) which allows movement.
- Fire and water (pitta dosha) which allows for change and handles digestion and metabolism.[26]
- Water and earth (kaphadosha) which gives structure or cohesion.

These 3 doshas let the body's organs work together in harmony. They also create your relationship with the environment and universe. Ayurvedic practitioners believe that health depends on the correct balance of all 3.[27] They claim that combinations of Ayurvedic medicine bring balance and harmony into the body. It helps to:

- Increase energy and wellbeing
- Decrease stress
- Prevent and cure disease

There is no scientific evidence to prove that Ayurvedic medicine can treat or cure cancer, or any other disease.

3.3 Ayurvedic Herbal medicine:

3.3.1 Amla

Amla is an Ayurvedic superfood. It is one of the richest sources of Vitamin C and also contains quercetin, phyllaemblic compounds, gallic acid, tannins, flavonoids, pectin and various polyphenolic compounds, making it the king of rejuvenation. Scientific research of three decades has proven the traditional use of amla to be correct. Laboratory trials of amla extracts have shown its ability to

kill and prevent growth of cancer cells while not harming the healthy cells.[38]

3.3.2 Garlic:

Garlic contains sulphur, arginine, flavonoids and selenium. The bio-active compounds of garlic are formed from allicin when the bulb is chopped or crushed. The European Prospective Investigation into Cancer and Nutrition (EPIC), an ongoing multinational study across 10 countries has shown a positive co-relation between the consumption of garlic and onion and reduced risk of cancer. Studies from the US, China and France have all shown that consumption of garlic is associated with lowered risk of cancer. Garlic is a known anti-bacterial agent with the ability to stop the formation (2) and activation of cancer causing agents. The World Health Organisation recommends at least 2-5 grams or one bulb of garlic daily for adults.[39]

3.3.3 Turmeric:

Haldi is one of the most researched herbs for its anti-cancer properties. It is attributed with anti-oxidant, analgesic, anti-inflammatory and antiseptic values. The principle component of turmeric is curcumin which is a potent antioxidant scavenging free radicals and inhibiting the growth of cancerous cells. Almost 2000 published scientific papers have shown that curcumin has the ability to kill cancer cells while not harming the healthy cells.[40]

3.3.4 Ashwagandha

Also known as the Indian ginseng, it has been used to help the body deal with stress in Ayurveda. Its anti-cancer value was realized about 40 years ago when researchers isolated a crystalline steroidal compound (withaferin A) from this herb. Further research on these extracts which were taken from the leaf of ashwagandha showed that they were able to kill cancerous cells.[41]

3.3.5 Holy Basil

Commonly known as Tulsi in India, this sacred herb is known for its healing powers. It is used for improving immunity and fighting stress. Research has shown that it also possesses anti-inflammatory, analgesic, anti-diabetic and anti-stress properties. Studies have shown that the phytochemicals present in tulsi prevented chemically induced lung, liver, oral and skin cancers by increasing the antioxidant activity, altering gene expressions, killing cancer cells and preventing the spread of cancer to other cells.[42]

3.3.6 Ginger

Ginger has a 2000-year long history of medicinal use. The active constituents of ginger have potent anti-oxidant and anti-inflammatory properties and some have exhibited cancer preventive activity in experimental models. Today, there are a number of studies that point towards the

cancer preventive effect of ginger. In a study conducted by the University of Michigan, ginger caused ovarian cancer cells to die. Another study, published in Cancer Prevention Research, showed decreased inflammation of the colon.[43]

4. Conclusion:

Herbal remedies are focused in the pharmaceutical industry to evolve a safe route for liver disorders. Therefore, hepatoprotective natural products are *Andrographispaniculata*, *Chamomile capitula*, *Silybummarianum*, *Cocciniagrandis*, *Flacourtiaindica*, *Wedeliacalendulacea*, *Annonasquamosa*, *Prostecheamichuacana*, *Ficuscarica*, *Lepidiumsativum*, *Sargassumpolycystum*, *Solanumnigrum*, *swertiachirata*, *Phyllanthusemblica*, *Curcuma longa*, *Picrorrhizakurroa*, *Azadirachtaindica*, *Aeglemarmelos*, *Cassia roxburghii*, *Orthosiphonstamineus*, *Jatrophaacurcas*, *Foeniculumvulgare*, *Trigonellafoenumgraecum*, *Eclipta alba*, *Garciniamangostana*. various plants having scientific evidence of anticancer property. Nowadays, many herbs are under clinical studies and being investigated phytochemically to understand their anticancer potential. More than 25% of drugs used during the last 20 years are directly derived from plants, while the other 25% are chemically altered natural products. Nine plant-derived compounds including vinblastine, vincristine, etoposide, teniposide, taxol, navelbine, taxotere, topotecan and irinotecan have been approved for use as anticancer drugs. 10-hydroxycamptothecin, Monocrotaline.

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