

# ACTIVE CONSTITUENT OF CERTAIN CRUDE DRUG USED IN INDIGENOUS SYSTEM

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**Abstract:** The medicinal plants that grows in tropical forests in World. Its active ingredients and extracts of plants (leaves, roots, stems, flowers, fruits) are used in ancient medication to treat varied diseases and that they are gift within the market as pharmaceutical merchandise (solid, liquid, semisolid, powder forms). industrial merchandise supported substances of plant origin that are usually connoted as natural have to be compelled to be subjected to watching and analysis by health authorities for his or her potential impacts on public health. The monitoring and evaluation of these products are critical because the boundary between a therapeutic action and a functional or healthy activity has not yet been defined in a clear and unambiguous way. Therefore, this merchandise are thought of borderline products, and that they need careful and rigorous studies, so as to use them as complement and/or even replacement of artificial medication that are characterized by side effects and high economic costs. This review explores the active constituent of some plant having meditative result on the body. These are the active ingredients obtained from plants, the chemical that have a marked, determinable physiological and so, probably medical activity upon the body. These constituents and their actions inside the body also are remarked as their pharmacological medication. The indigenous herbs of diabetes mellitus, liver disorder and cancer are framed here with its medicinal uses.

**Index Terms:** Herbal plants, Diabetes, Cancer, Liver diseases.

## INTRODUCTION

Indigenous system of medicine are Traditional medicine also known folk medicine comprises medical aspects as “the sum total of the data, skill, and practices supported the theories, beliefs, and experiences endemic to completely different cultures, whether or not interpretable or not employed in the maintenances of health likewise as within the bar, diagnosis, improvement or treatment of physical and mental health”.<sup>1-4</sup> Traditional medicine is contrasted with scientific medicine with active constituent or crude material. Active constituents are the ingredients having biological activity, that is analogous term as active pharmaceutical ingredients and bulk active utilized in medicines, and the term active substance is also used for natural merchandise. Some medication product contain over one active constituent, that is originally denoted as wizardly substance or drug.

The term active constituents typically chosen once pertaining to the active substance of interest during a plant part containing multiple constituent which are reserved as secondary metabolites; rather than active constituent also contain many group such as fats, proteins, vitamins, polysaccharides, enzymes, terpenoids, minerals, sugar, steroids, alkaloids, anthocyanins, anthraquinones, cardiac glycosides, coumerins, glycoside, flavonoids, phenol, and tannin many more. <sup>5-6</sup> the active constituents are extracted from crude drugs that may be solid, semisolid, liquid, which are obtained from several techniques as they are impure. The selection of technique is much important for separation of active constituent and other constituent which are responsible for pharmacological activity. <sup>7-8</sup>

The success of drug discovery from plant sources has resulted primarily within the development of assorted classes like anti-diabetic, antiviral, antiulcer, organ dysfunctioning, anticancer, anti-aiding, anti-inflammatory, laxative, aseptic, anti-microbial a lots of a lot of medical activity against many diseases.

Several drug are approved, by Food and Drug Administration for the treatment of various diseases that are directly isolated from the natural product and few are natural products spinoff.<sup>9-10</sup>

This review contains the foremost normally used natural merchandise as anti-diabetic agent, anticancer, and for liver dysfunctioning, provides detail account on flavoring drug together with and its different healthful used. During this criticism an effort has been created to compile the reported plant obtainable in several scientific journals and should be helpful to the health professionals, individual and student operating within the field of material medical, pharmacognosy, photochemistry, and medical specialty to develop proof primarily based medicine to cure completely different forms of Diabetics, Cancer, and liver disorder. This review shows the importance and the interest placed on meditative plants within the drive to demonstrate their effects and the accountable responsible bioactive agents. This review additionally covers the common name of a plants, the components that are normally used as a remedy sources, extracts, constituents, geographical supply, mechanism of action, uses.

## TRADITIONAL HERBAL MEDICINAL FOR DIABETIC THERAPY

### Diabetes Mellitus

This is the groups of metabolic alterations characterized by hyperglycemia ensuing from defects in hyperglycemic agent secretion, action of each. It is created of two types: kind I and kind II. Kind I diabetes usually said as juvenile-onset diabetes, is hypoglycemic agent dependent.<sup>11</sup> the type 2 that is non hypoglycemic agent dependent. Its already been established that chronic hyperglycemia of polygenic disease is related to long run injury, dysfunction and eventually the failure of organs, particularly that eye, kidney, nerves, heart, blood vessel<sup>12-14</sup>. It has on adverse effects of carbohydrates, super molecule and super molecule metabolism leading to chronic hyperglycemia and abnormality of lipid profile. an oversized variety anti-diabetic medicines are obtainable within the pharmaceutical marketplace for polygenic diseases and its connected complications; but, presently no effective medical care is accessible to cure the diseases. However, thanks to unwanted aspect effects the efficacies of accessible compounds are debatable and there's a requirement for brand new compounds for the treatment of polygenic diseases. Though there has been a growing interest within the flavor medication in care and management of polygenic Diseases each in developments and developed countries, due to their natural origin and fewer aspect effects.<sup>15-19</sup>

#### 1. *Gymnema sylvestre* (Gurmar)

**Common Name:** Gurmar, Meshashringi, gokhru, vishani, sirukurinjan

**Family:** Asclepidaceae (20-22)



Plant 1: Leaves of *Gymnema sylvestre*

**Geographical Source:** It is native plants in south west of India, Australia, Southeast Asia and Africa.

**Description:** *Gymnema sylvestre* is woody plant, climbing vine with ovate and elliptic leaves and bell shape yellow flowers.

**Parts Used:** Leaves

#### Chemical Constituent

1. **Oleanane saponins:** Gymnemic acid, Gymnemasaponins.
2. **Gymnema saponins:** Gymnemagenin, Gymnestrogenin<sup>23</sup>

3. **Dammarane saponins:** Gymnemasides<sup>24,25</sup>
  4. **Triterpenoid saponins:** Anthraquinone, flavones, flavonoids<sup>26</sup>
  5. **Flavonoids:** Epicatechin, apigenin, luteolin
  6. **Others:** Kaempferol, phytin, resins, tartaric acid, formic acid, butyric acid, beta-amyrin
- Active Constituents:** Gymnemic acid, gymnemagenin

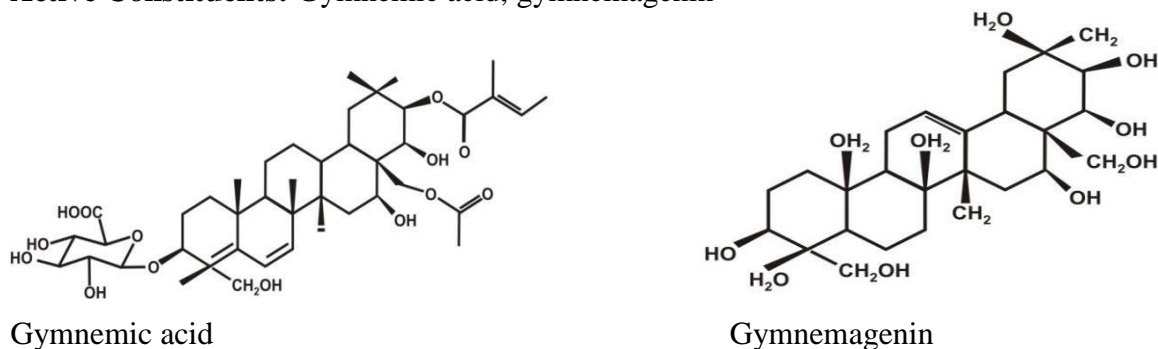


Figure 1: Active Constituents of *Gymnema sylvestra*

### Mechanism of Action

- 1) It increase the secretion of insulin
- 2) It promotes regeneration of island cells
- 3) It increase utilization of aldohexose: its shown to extend the activities of enzymes accountable for utilization of glucose by hypoglycemic agent dependent pathway, a rise in phosphorylase activity, decrease in gluconeogenic enzymes and sorbitol dehydrogenase and
- 4) It cause inhibition of aldohexose absorption from intestine and helps to reduce craving of sugar.<sup>21-26</sup>

### 2. *Pterocarpus marsupium* (Vijayasar)

**Common Name:** Bijasar, asan, Malabar Kino, vijayasar

**Family:** Fabaceae



Plant 2: Leaves of *Pterocarpus marsupium*

**Geographical Source:** The plant species is native to India, Nepal and Sri Lanka. The particularly found in certain areas like Western Ghats, in the Karnataka-Kerala region, in the state of Gujrat, Madhya Pradesh, and Bihar.

**Part Used:** Heartwood, bark, leaves and flower Heartwood gives hypoglycemic effect

### Chemical constituent

1. Heartwood : Isoflavanoids, terpenoids, tannins
2. Roots : Liquids-ritigenin, garbanzol, pseudo-dobatagenin, 5-deoxy-kaempferol, pterosupin, pterostilbene, marsupol, carpusin
3. Kino gum from bark: Kitannic acid, kinoin-red  $\beta$  –eudesmol,
4. Others: Isoliquiritigenin, liquiritigenin, epicatechin, marsupinol,<sup>27-30</sup>.

**Active constituents:** Kitannic acid, Pteroside, Masupsin

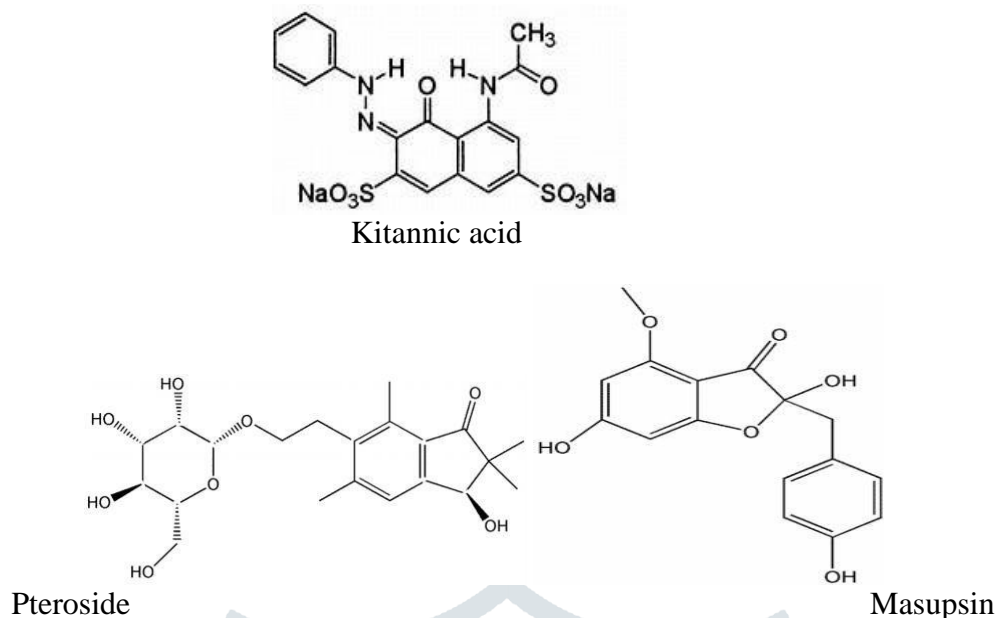


Figure 2: Active constituents

### Mechanism of Action

1.  $\beta$ -cell Regeneration
2. Insulin Release
3. Insulin like Activities
  - Increase glucose uptake
  - Increase glycogen synthesis
  - Increase activity of oxidative enzymes
4.  $\alpha$ -amylase &  $\alpha$ -glucosidase inhibitory effects
5. Effects on TNF- $\alpha$  and Peroxisome Proliferator Activator Receptors (PPRAs)

### 3. *Trigonella foenum-graccum* (Fenugreek)

**Common Name:** Fenugreek, alholva, boyotu

**Family:** Fabaceae

Plant 3: leaves of *Trigonella foenum-graccum*

**Geographical source:** It mainly found in India, North America and certain region of Africa.

**Parts used:** seeds, leaves

**Chemical constituents:** *Trigonella foenum* has several chemical constituents in it, with various pharmacological activity mainly it has amino acids, alkaloids, saponins, flavonoids, steroids, and other active constituents.

- 1) **Amino acids:** Isoleucine, histidine, leucine, lysine,
- 2) Argenine Trymethylamine, trigonelline, neurin, choline, betain.
- 3) **Saponins:** Graecunnins, fenugrin, fenugreekine, trigofoenosides.
- 4) **Flavonoids:** Rutin, vetixin, isovetixin, quercetin.
- 5) **Steroids:** Diosgenin, Aponaretin, neogitogenin, tigogenin.

6) **Other:** Coumarin, lipids, vitamins, minerals, etc.

### Mechanism of action

The antidiabetic effect as

- 1) It forms colloidal-type suspension in the stomach and intestine,
- 2) Slowing glucose absorption. <sup>31-35</sup>

### 4. *Salacia reticulata* Common

**Name:** Marking Nut tree **Family:** Hypocrataceae

**Parts:** Greenish brown bark, Roots, leaves, stems, fruits

**Geographical Source:** It is indigenous to India, Japan and Sri Lanka.



Plant 4a: Fruits and leaves of *Salacia reticulata*



Plant 4b: Roots of *Salacia reticulata*

### Chemical Constituent

*Salacia reticulata* are especially known to contain anthocyanidines, catechins, phenolic acids, quinones, and related triterpenoids. The major phytochemicals are;

Mangiferin, Kotanolol, Salacinol, Salaciquinone, (-)-Epicatachin, (-)-4'-methyl epigallocatechin, (-)-epiafzelechin-(4 $\beta$ -8)-(-)-4'-O-methyl epigallocatechin, Lgusterin, pristimerin, 3-oxofriedelane, 3 $\beta$ -hydroxyfriedelane,  $\beta$ -sitosterol, 28-hydroxy-3-oxofriedelane and dulcitol,  $\beta$ -stearoxy-olean-12-en, gutta-percha, 3,4-seco-friedelan-3-oic acid, palmitic acid,  $\beta$ -sitosterol glucoside, ethyl glucopyranoside and many more.

**Active Constituents:** Mangiferin, kitalanol, and salacinol

### Mechanism of Action

- 1) Inhibition of post prandial glucose
- 2)  $\alpha$ -glucosidase inhibitory effect
- 3) The intestinal enzymes,  $\alpha$ -glucosidase and  $\alpha$ -amylase break down starches, dextrin, maltose and sucrose into readily absorbed monosaccharides within the small intestine.
- 4) The deactivation of enzymes cause delay in the absorption of glucose.

These mechanism is current clinically used in  $\alpha$  -glucosidase inhibitor like Acarbose<sup>36-41</sup>

## 5. *Swertia chirata*

**Family:** Gentianaceae



**Plant 5: Flower and leaves of *Swertia chirata***

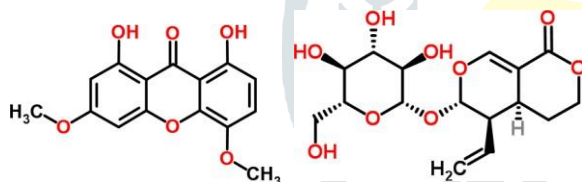
**Common Name:** Chiratta

**Geographical Source:** Temperate Himalaya region

### Chemical Constituents

The herb contain, gentiopirin, swertenol, episwertinol, chiratenol, gammacer-16-en- 3 $\beta$ -o, 21-aH-hop-22(29)-en-3 $\beta$ -ol, taraxerol, oleanolic acid, ursolic acid, swerta-7, pichierenol, 8-dimethoxyxynthone (chiratol) besides swerchirin and 2, 5- dihydroxyterephthalic acid, ophelic acid and chiratin are two bitter compounds, Amarogentin is one of the bitterest compounds known in *Swertia chirata*, Isobellidifoli swertiamarin. Carbonates and phosphates of calcium, potassium and magnesium are the ash yield.

**Active Constituents:** Swerchirin, swertiamarin



Swerchirin Swertiamarin

### Mechanism of action

- It lowers the significant blood sugar level by decreasing secretion of insulin.<sup>42-47</sup>

## TRADITIONAL HERBAL MEDICINAL FOR LIVER DISEASES

### Liver disorder

The liver is one of the most metabolically active organs of the body and second largest organ in the body. It synthesizes non-essential amino acids, delaminates excess amino acids for use in energy production and forms urea, which the kidneys excrete (48,49).

As liver processes everything eat and drink, which it converts into energy and nutrients for body to use. It filters out harmful substances, such as alcohol, from your blood, and helps your body to fight off infection. Acute liver failure strikes fast. Loss of liver function within weeks or even days. During chronic liver failure, liver become inflamed. This inflammation causes the formation of scar tissue over time. Treatment depends on the stage of the disease. If only part of the liver is damaged, forgery may be recommended to remove the damaged part. A doctor can also take imaging tests of liver to look for damage. If a healthy liver is damaged, it can grow back. If the damage is too severe, which can sometimes be the case with fast acting acute liver failure, a liver transplant may be necessary. Therefore, due to high risk in removing, transplantation interest towards traditional medicines are increasing. (50-59)

6. *Phyllanthus niruri*  
**Common Name:** Bhuamla **Family:**  
 Euphorbiaceae



Plant 6: Leaves of *Phyllanthus niruri*

**Geographical Source:** Tropical countries including India

### Chemical Constituents

**Alkaloids:** Nirurin, ent-norsecurin,

**Flavonoids:** Quercetin, rutin, astragalín, isoquercitrin, nirurin,

**Terpenoids:** Lupeol acetate, lupeol,

**Tannins:** Geranin, **Cumarins:**

Ellagic acid, **others:** Saponins, etc.

**Active Constituents:** Nirurin<sup>51-54</sup>

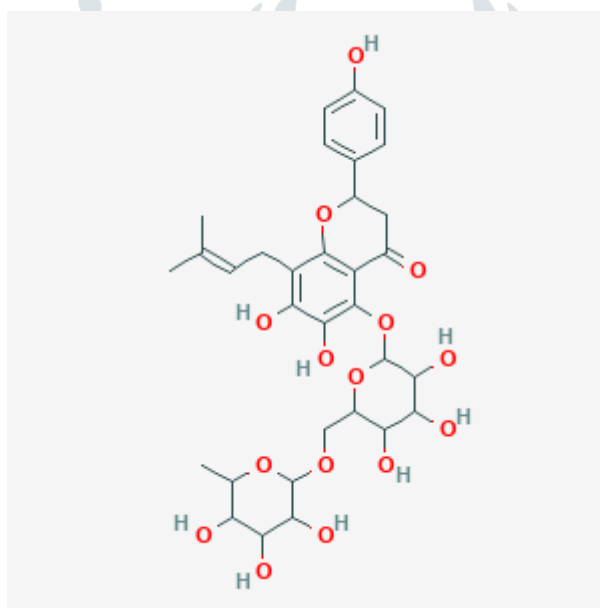


Figure 6: Nirurin

### Mechanism of Action

It control the sugar level in blood

7. *Terminalia arjuna*

**Common Name:** Arjun tree **Family:**

Combretaceae

**Parts Used:** Stem, bark, fruits, leaves, seeds

**Geographical source:** Terminalia Arjuna is a native plant in Bangladeshi and traditional system of medicine is used for the all over countries.



Plant 7: Fruits of *Terminalia arjuna*

### Chemical Constituent

**Flavonoids:** Arjunone, Bicalein, Arjunolone, Luteoline, Gallic Acid

**Tannins:** Terflavin, Gallic Acid, Ellagicacid, Arjunin **Triterpenoids:** Arjunolic Acid, Arjunic Acid, Ursane Triterpenoids **Amino acid:** Tryptophan, Tyrosine, Histidine, And Cysteine

**Other:** Saponins, Sterols, And Minerals also are also present in plant

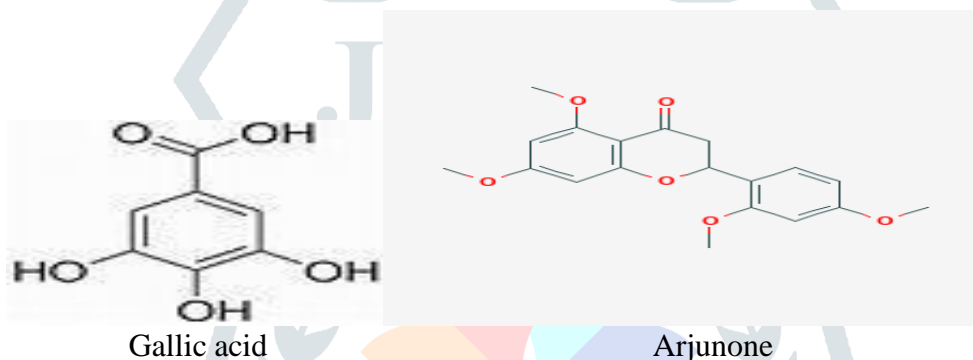


Figure 7: Active constituents

### Mechanism of Action

It inhibits the glucose secretion, and lowers the blood sugar level. (54-57)

### 8. *Barbadensis Miller (Aloe Vera)*

**Common Name:** Curacao aloes, aloe Vera, Aloe perryi Baker

**Family:** Liliaceae

**Geographical Source:** The plant introduced in Northern Africa, China Gibraltar, Peninsula countries and west India.



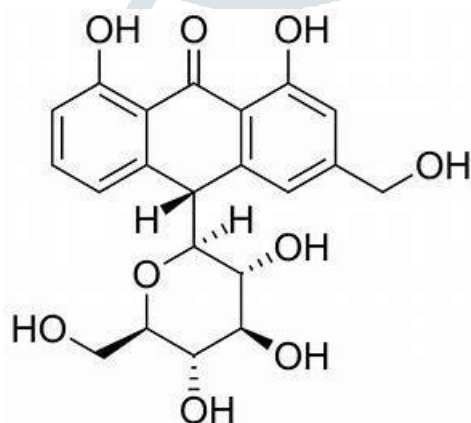


**Plant 8: Aleovera**

**Parts Used:** Leaves, roots, flowers

### Chemical Constituent

The aloe are all the verities the major source of anthraquinone glycoside. The active constituent of aloe is aloin, which is the mixture of glycoside, and the barbaloin is the chief constituent. It is chemically aloe emodinanthrone C-10 glycoside. Among with aloe vera also contain isobarbaloin,  $\beta$ -barbaloin, aloe emodin and resins. The leaf of plant also contains aloetic acid, homonataloin, aloesone, chrysophanic acid, galactouronic acid, choline, choline salicylate, saponins, coniferyl alcohol, etc.



Aloin

### Mechanism of Action

It controls the sugar level in blood. <sup>58-61</sup>

9. *Allium sativum*

**Common Name:** Garlic **Family:**

Liliaceae



**Plant 9: fruit and flower of *Allium sativum***

### Chemical Constituents

Garlic bulbs contain 29% of carbohydrates, about 56% of albumin, 0.1% of fat, mucilage, and 0.06% volatile oil, and some other phytoconstituent like terpenoids, flavonoids, alkaloids, sugars, steroids, glycoside, saponin, phenol and tannins. Garlic also contains allyl propyl disulphide, diallyl disulphide, alliin and allicin, ajoene. Alliin by action of enzymes allinlyase is converted into allicin. <sup>62-65</sup>

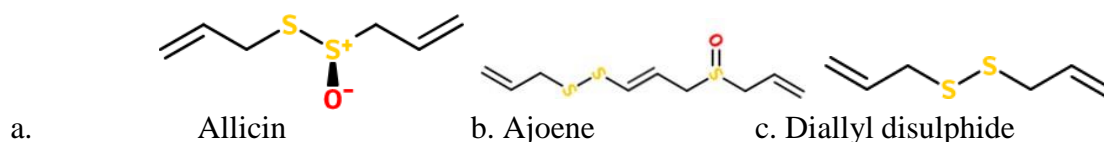


Figure: 9

### Mechanism of Action

It control the sugar level in blood

#### 10. *Ocimum sanctum* (Tulsi)

**CommonName:** Holy Basil, Tulsi **Family:**

Lamiaceae

**Geographical Source:** India, Sri Lanka, USA

**Parts Used:** Stems, leaves, roots, flowers **Chemical**

#### Constituent

Tulsi leaves containing bright, yellow colored volatile oil. It also contains 0.40% eugenol, carvacrol and eugenol-methyl-ether. Caryophyllin also present. The Tulsi plant also contains

**Flavonoids:** Luteolin, isothymusin, cirsimartin,

**Terpenoid:** Ursolic acid, oleanolic acid, carnosic acid

**Steroids:** Phytosterols,  $\beta$ -sitosterol,  $\beta$ -sitosterol-3-O- $\beta$ -D-glucopyranoside, stigmasterol

**Other:** Glycoside, saponin, tannins, appreciable amount of vitamin C

**Active Constituent:** Eugenol

#### Mechanism of Action

Maintain the blood glucose level<sup>66-74</sup>

### TRADITIONAL HERBAL MEDICINE FOR CANCER Cancer

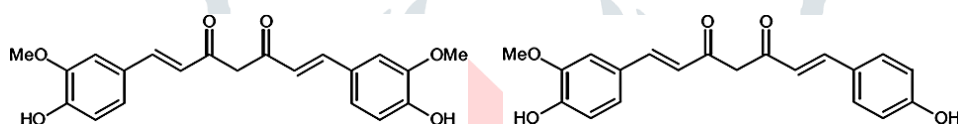
Cancer is associate cluster of diseases involving abnormal cell growth with the potential in invade or unfold to alternative components of the body. These distinction white benign tumors, that don't unfold. Potential signs and symptoms as well as a lump, abnormal hemorrhage, prolonged cough, unexplained weight loss and a changes in a very intestine movements<sup>75-78</sup>. While these symptoms might indicate cancer, these also can have cause. The theory of interconnection and mutual restraint within the human body, and therefore the conception of treatment in step with syndrome differentiation are mirrored within the knowledge of cancer etiology and the principles of identification and treatment with indigenous system. There are various type of cancer of each part of living beings and various type of treatment therapy available to treat it but with its severe side effects now days the conversion into herbal treatments, where most commonly used is curcuma longa.<sup>79-85</sup>

**11. *Curcuma longa* (Haldi)****Common Name:** Haldi, turmeric **Family:**

Zingiberaceae

**Plant 11: Roots of *Curcuma longa*****Parts Used:** Roots, leaves, flowers **Geographical****Source:** India, Newzeland **Chemical Constituent**

*Curcuma longa* contains protein, fat, minerals and carbohydrates. Some phenolic Compound and terpenoids, including diarylheptenoids and diarylpentanoids, phenyl propene and other phenolic compounds. It is also rich sources of polyphenolic curcuminoids i.e. curcumin, dimethoxy curcumin, and bisdemethoxycurcumin.



Curcumin

Dimethoxy curcumin

Bisdemethoxycurcumin

**Figure 11****Mechanism of Action**

Curcumin play the important role as anti-cancer agent. Apoptosis by induction plays a significant task in its anti-cancerous effect. Apoptosis was caused by this block cell cycle series, both are involved in reducing cancerous cell enlargement in aortic smooth muscle cells (86). Curcuma may act differently on different cell line. (76-82)

## 12. *BetulaAlba*

**Common name:** White birch, black birch and silver birch

**Family:** Betulaceae



Plant 12: Fruits and leaves of *Betulaalba*

### Chemical Constituent

**Bark:** Penta cyclic triterpene: Betulin: Betulinic acid, oleanolic acid, lupeol and erythrodiol. (82-85)

**Leaves:** Flavones glycosides: Quercetin, kaempferol and myricetin and other phenolic compound, triterpenes alcohol and malonyl esters.

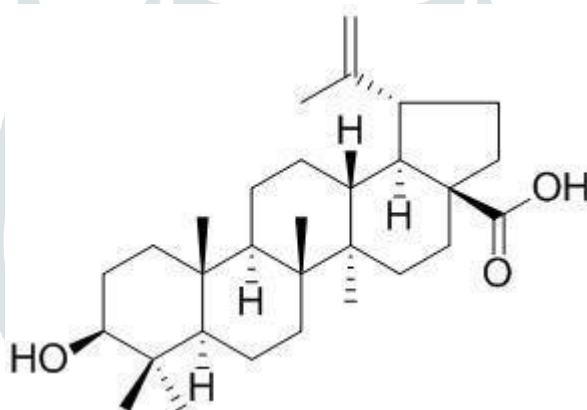


Figure 12: Betulinic acid

### Mechanism of Action

The betulinic acid decreases cancer cell motility and induced apoptosis cell death<sup>80-86</sup>.

## 13. *Catharanthusroseus*( Sadafuli )

**Common Name:** Nayantra, Sadabahar **Family:**

Apocynaceae



Plant 13: Flowers and leaves of *Catharanthusroseus*

### Chemical Constituent

The plant itself synthesized a wide variety of chemical constituents that are used to the important biological functions. The plant also possess flavonoids, carbohydrate, saponin, and alkaloids. Alkaloids are the most active compound of catharanthus roseus i.e. vincristine and vinblastine. It has several alkaloids present in it which are used as the pharmacological activity. The alkaloids such as acti-neoplastidemic, vindesine, vindelin, tabersonine etc.

**Active Constituents:** Dicotyledonous angiosperm, vincristine, vinblastine

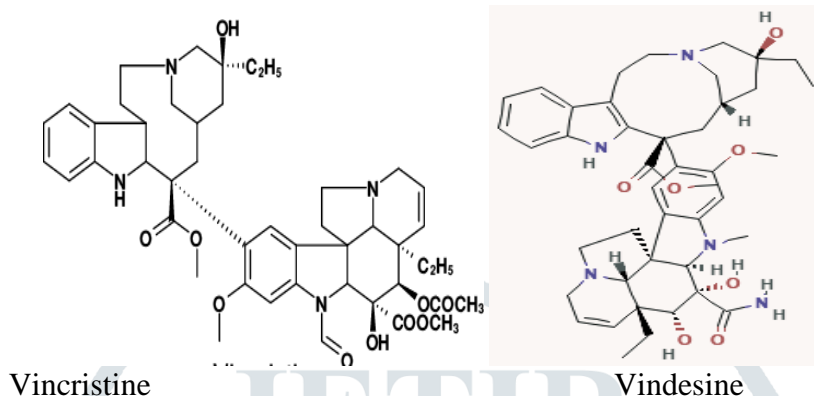


Figure 13: Active constituents

### Mechanism of Action

- Inhibits tubulin by binding to  $\alpha/\beta$ -tubulin
- Prevents microtubules that divide and replicate the cells i.e. inhibiting mitosis in cell cycle. <sup>87-97</sup>

#### 14. *Taxus brevifolia* Common

**Name:** Pacific yew tree **Family:** Taxaceae



Plant 14: Fruits and leaves of *Taxusbrevifolia*

**Geographical Source:** This species of yew tree is available in Himalaya region, hence called Himalaya yew tree (98).

**Chemical Constituent:** Taxus is a plant are major active constituent is Taxol, it is an alkaloids, paclitaxel.

**Active Constituent:** Taxol

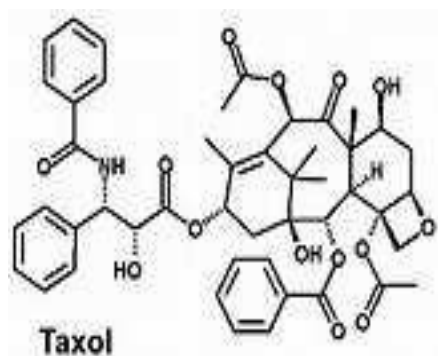


Figure 14: Active constituents

## Mechanism of Action

Paclitaxel treated cells have defects in mitotic spindle assembly, body segregation, and biological process, not like different tubulin targeting medication, like colchicine, that inhibit tubule assembly.

### 15. *Cannabinol sativa*

**Common Name:** Marijuana, tetrahydrocannabinol <sup>99-100</sup>

**Family:** Cannabaceae



**Plant 15: Fruits of *Cannabinol sativa***

**Parts Used:** Fruits

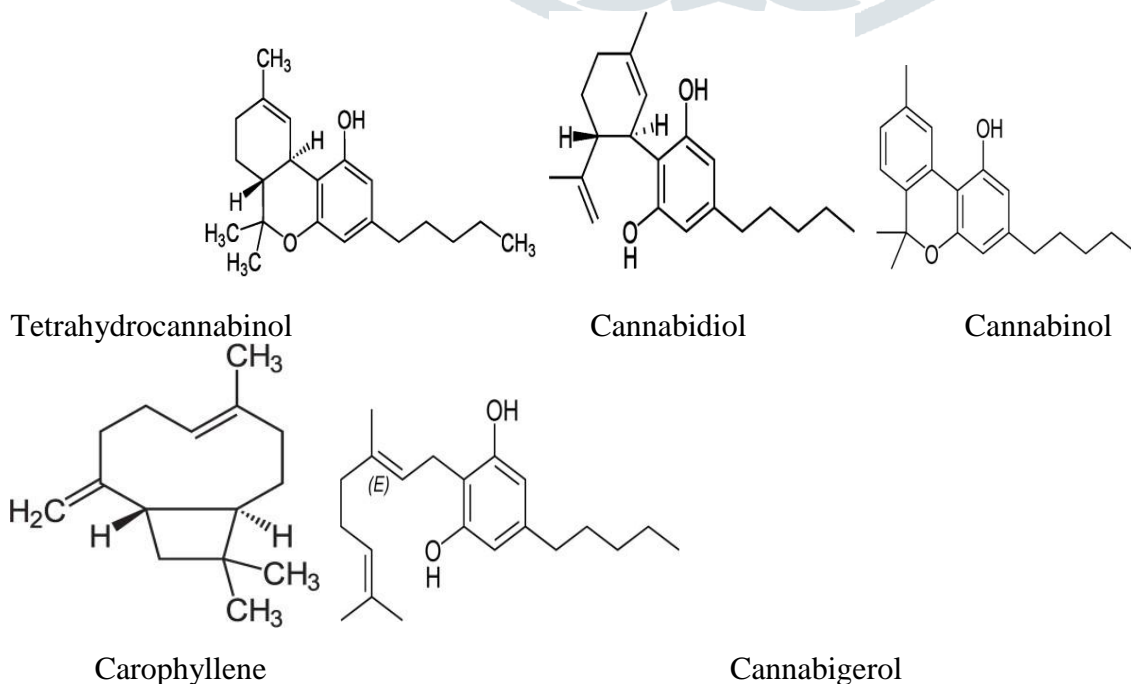
**Geographical Source:** India, Pakistan, Bangladesh, USA

### Chemical Constituent

*Cannabis sativa* consisting a unique secondary metabolites of alkyl resorcinol and monoterpene group, tetrahydrocannabinol. The plant containing number of terpenophenolic compounds<sup>101</sup>.

### Active Constituents

Cannabigerol,  $\beta$ -caryophyllene, cannabinol, cannabidiol etc.



**Figure 15: Active constituents**

## Mechanism of Action

- Inhibition of cancer cell proliferation.<sup>102</sup>

## SUMMARY

The herbs discussed are not only treat a single disorder it also has other medicinal uses with same plant part or different plant in a single plant and are known with different names in Ayurveda, Hindi, English, Unani, traditional and others. Active constituents are much more important for the biological activity and chemical constituents for additional biological activity which relates it use as active pharmaceutical ingredients, additives, combinational activity, excipients, lubricants, or other. Hence, the given table summarize all the discussed herbs.

**Table 1: Herbs Name, Family, Common Name, Parts Use As Medicine, Its Contains and Uses**

Sr. No	Herbs name	Family	Common name	Parts used as	Active Constituents	Ref. No.
1.	<i>Gymnema sylvestrea</i>	Asclepiadaceae	Gurmar, cow plant, gymnema	Leaf (hypoglycemic, astringent, stomachic, antiperiodic, diuretic, tonic, refrigerant, urinary disorders)	Gymnemic acid 7-9.6%	25-27
2.	<i>Pterocarpus marsupium</i>	Fabaeceae	Malabar kino, vijayasar	Heartwood (antibiotic, hypoglycemic control blood sugar), gum in bark (astringent, antidiarrheal antiheamorrhagic), leaves (skin diseases), flowers (febrifuge)	Kinonin	30-33
3.	<i>Trigonella foenum graccum</i>	fabaeceae	Fenugreek	Seeds (lowering blood sugar/Cholesterol's. anti-diabetic, stomach upset, inflammation, appetite, softening the stool, liver cancer,	Graecunnins	36,37
4.	<i>Salacia reticulate</i>	Fabaecea	ponkoranti	Roots (diabetes, Salacia, gonorrhea,	Mangiferin, Ketalanol, Salacinol	47-49

				asthma, itchiness, joint pain, obesity, excess thirst, menstrual problems)		
5.	<i>Swertiachir ata</i>	Gentianacea	Biter stick	Plant (diabetes, inflammation , antioxidant, antibacterial, anathematic, hemostatic, skin disease, )	Mangiferan, swerchirin	51-54
6.	<i>Curcuma longa</i>	Zingibereceae	Haldi, saffron,	Fruit( anticancer, antidiabetic, antioxidant, hepatoprotect ive, anti HIV, anti alzemar, antivenom, antibacterial, digestive agent)	curcumin	56-58
7.	<i>Taxusbrevif olia</i>	Taxaceae	Pacific yew	Bark ( breast, ovarian, lungs, liver, gastrophageo l cancer	paclitaxel	62-65
8.	<i>Catharanth usroseus</i>	Apocynaceae	Nityakalya ni, sadabahar, bara massi, periwinkle	Plant (cancer, diabetes, hypotensive, antiviral, sedative), Roots (paste in septic wounds, decoction in fever), leaves( decoction for babies in gripping pain,	Vinblastine, vincristine, vinorelbin	68-72
10.	<i>Podophyllu mpeltatum</i>	Berberidaceae	Podophyll um Rhizome, Podophylli -Rhizome, May apple Root, American Mandrake	Fruit (Hepatic trouble, gastrointestina l irritant, constipation, warts, anticancer)	Podophylotoxi n, podophyloresi n, quercetin , starch	81-83



11.	<i>Allium sativum</i>	Amaryllidaceae (alliaceae)	Garlic	Fruits bulb (healthy liver function, high blood pressure, arthosclerosis, cancer fighting property, antifungal, diabetes, antiseptic)	allicin, diallyldisulfide, diallyltrisulfide	85-88
12.	<i>Phyllanthus Niruri</i>	Euphorbiaceae	Bhuaamla	Fruits, leaves	Nirurin	90-92
13.	<i>Traminalia Arjun</i>	Combretacea	Arjuna,	Stem- bark( cirrhosis of liver, heart disease, hypertension, astringent, sweet, acrid, cooling, ulcer treatment, fractures, ischemic heart disease, aphrodisiac, urinary astringent, expectorant,	Tannin cardiac glycoside 20-24%	94
14.	<i>Oscimum sanctum</i>	lamiaceae	Tulsi, holy basil,	Plant (diabetes, liver disorders, common colds, headaches, stomach disorders, inflammation, heart disease, poisoning and malaria, antipyretic, pain killer, lower cholesterol, nervine, sedative)	eugenol	97
15.	<i>Barbados aloe</i>	Aloaceae	Aloe, Indian Alces, Kumari, Ghirita, Gawarpalt ra, Aloe Vera, Curacao Aloe, Lu	Plant (hepatoprotective, antidiabetic, balance metabolism, antioxidant, immune system, antimicrobial,	Beta-carotene,	99-102

			Hui	improves memory functioning, antiinflammatory, antiviral, skin diseases, antitumor, antiseptic, as dietary supplement )		
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## CONCLUSION

The present review has presented comprehensive details of some plants used in the treatment of diabetes mellitus, cancer, and liver disorder. Some of these plant derived medicines, however, offer potential for cost effective management of diseases through dietary interventions, nutrient supplementation, and combination therapies with synthetic drugs in the short term, and as the sole medication from natural sources over the long term. The presences of bioactive chemicals are mainly responsible for the pharmacological action. However, many other active agents obtained from plants other than active constituents are in process.

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