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## Literature Review of *Chobchini* (*Smilax china* Linn.)

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### ABSTRACT

Plant of *Chobchini* (*Smilax china linn*) is commonly occurs in Japan and China, where is it indigenous. In mossy forests at altitudes of 1,600 to 2,400 meters in Bontoc, Lepanto, Benguet, and Zambales Provinces in Luzon, and in Mindanao and Negros. The parts used of this is root, leaves and fruit. Plant of *Chobchini* has medicinal value hence used in various diseases and included as an ingredient in a number of formulations. However, its two parts i.e. root and fruit are more commonly used. The plant as whole has described to possess Depurative, demulcent, diaphoretic, stimulant, alterative, antisyphilitic, aphrodisiac. Studies have described Dafe Taffun (antimicrobial), antimutagenic, antioxidant, Muhallil and Dafe Alam (Anti-inflammatory & analgesic), anti-cancer, anti-diabetic and neuroprotective effects. etc. Several studies have been carried out for the therapeutic evaluation of its efficacy and safety. So, I want to compile and summarized all the literature at one space.

**Keywords:** *Chobchini*, *Dafe Taffun*, *Muhallil* and *Dafe Alam*.

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## INTRODUCTION

Chobchini (*Smilax china* Linn) is an herb with an ancient history. The genus name 'Smilax' comes from the a widely distributed climbing shrub with hooks and tendrils, and China because it is commonly cultivated in china showing its reputation as a freer from disease. Leaves are as tea and other form to detoxification of body, Roots and Fruit is used in various form like raw and cooked to treat various condition like, antiepileptic, anti-inflammatory, nervine tonic, anti-rheumatism anti syphilitic aphrodisiac and demulcent. The herb is also considered resolvent and strongly stimulant, flatulence, dyspepsia, constipation. Useful in skin disorders, Nuralgia. It is chiefly used to gout and rheumatoid arthritis. It also strengthens the whole body, Nervous system also useful in fever<sup>1,2,3,4</sup>. Many of Smilax positive benefits can be traced to its high concentration of the flavonoid, smilacin, tannin, resin, cinchonin and saponin.<sup>5,6</sup>

## MATERIALS AND METHOD

Review material collected from the different ancient Unani books, PG Dissertation, online authentic research Journals & different websites and summarized with the help of computer.

### Description of Plant In Unani Literature

A climbing thorny shrub with sparsely prickled and unarmed stems, branchless slender, smooth and terete, leaves elliptic, unneate or acuminate, petioles 13-17mm narrowly sitting unarmed, umbels sub sessile, many flowered, penduncle abractiate, pedicles 6-8mm, bracteoles tabulate, flowers very small, white buds depressed, globes, deeply lobed from groove on the back of the obovatecoriasius sepals, petals, minute, stamen very short, staminoles in female flowers and this plant occurs throughout the year.<sup>7</sup>



Family : Liliaceae

**Synonyms:** - <sup>5,6,7,8,9,10</sup>

Unani Name : Kasab al seeni

Botanical Name	:	<i>Smilax china</i> linn.
English Name	:	China Root.
Urdu Name	:	Chop chini
Arabic	:	Ashusseenee, khushabusseenee
Hindi	:	Chopcheenee
Malayalam	:	China pairu
Marathi	:	Chopcheenee
Parsian	:	Chobchini
Bengali	:	Chopcheenini
	:	kumarika, shukchin
Tamil	:	Parinankipatte
Telugu	:	Galichekka

**Botanical Description of plant:**

Sarsaparillang-china is a woody vine armed with small thorns all over the stem. Rhizomes are long, thick and grey colored. Leaves are simple, alternate, elliptically oblong to subrounded, 5 to 8 centimeters long, 2.5 to 4 centimeters wide; those toward the end of the branches are much smaller and veined. Petioles are about 7 millimeters long, with adnate spiculate stipules which frequently are extended into tendrils. Inflorescence arises from the upper leaf axils, 3 to 5 centimeters long. Flowers are white to yellowish-green, their pedicels subtended by bracteoles, umbellate. Berries are globose, reddish when ripe.

**Procedures and time of collection:**

Tuberous root and rhizomes of the plant are carefully dug up and cut off near the stock which is covered up again with the soil. Harvested roots are washed well, peeled and trimmed to small pieces, dried in sun and tied up in bundles.

**Preservation and storage:**

The dried drug obtained is kept in air tight bottles in cool and dried places. The medicinal effectiveness of drug last up to ten years.<sup>11</sup>

**Microscopic:**

Transverse section of rhizome shows on its outer edge, several layer of large, tangentially elongate, thick walled cells with large empty space which at times are filled with brown coloring matter, followed by a layer or two of bigger cells containing bundle of calcium oxalate raphides. Below this, two three layers of tangentially elongated and rectangular cells followed by a few layers of thin walled closely pitted cells. A wide zone of large thick walled and finely pitted

parenchymatous ground tissue is traversed by a few obliquely cut vascular bundles. Centre core has numerous closely arranged bid conjoint, collateral and close fibre vascular bundles which are variously oriented. There is no distinct endodermis delimiting the outer ground tissue from the inner one. In the macerated material large, small and more or less isodiametric parenchymatous cells are found, large cells measure 557-813, to 976 microns in length. And 208- 272 – 700 microns in width, smaller cells measure 184x128 microns. Vascular bundles consist of 3-7 vessels, tracheid, sieve tubes and companion cells, vessels mostly show reticulate type of thickening and measure 816-2000-3200 microns and 51-125-155 microns in width some vessels are unusually long and forked. The vessels bear elongated slit like bordered pits. Tracheid is few and elongated slit or oval bordered pits. Folium consist only sieve tubes and companion cells. Encircling the folium are groups of thick walled stratified and closely pitted fibres which have big lumen. Some of these fibres are separated. A few isolated parenchymatic cells of the ground tissue contain red granular colouring matter. All parenchymatous cells contain simple and compound spherical, cup shaped, biconvex and polygonal starch grain with a central hilum which may be a point, slit or radiating fissure. Compound grains of two to more than fifty components with flat contact surfaces are also present.<sup>11</sup>

#### **Study of the powdered drug:**

The powder is pinkish buff is colour. Mucilaginous and bears a slightly irritating taste. It is mainly comprised of fibers, xylem vessels and tracheid with various types of secondary wall thickenings, some finely pitted, thick walled parenchyma and abundance of starch grains.<sup>7</sup>

#### **Identify, Purity and strength:**<sup>7</sup>

Foreign organic matters	:	Nil
Purity	:	100%
PH value (10% solution)	:	7.2
Physicochemical constant (%)	:	
Total ash	:	0.95
Acid Insoluble ash	:	0.18
Water soluble ash	:	0.62
Loss on drying at 105D c	:	4.00
Solid content	:	84.72

#### **Chemical constituents:**

Phytochemical screening of methanol extract contains saponins, sarsponin and parallin, which yield isomeric sapogenin, alkaloids, flavonoids, sasapogenin and smilogenin. It also contains sitosterol and stigmasterol in the free form and as glucosides.<sup>152,155</sup>

Root contains fat, sugar, glucoside, coloring matter, gum and starch. Root also yields smilacin, tannin, resin, cinchonin and saponin. Dried rhizomes yield fat, sugar, glycoside, glycoside, coloring matter, saponin, tannin, cinchonin. smilacin, and starch. Leaves reported to contain rutin. Ethyl acetate fraction of an ethanol extract of rhizomes yielded seven compounds, structure of three were established as dihydrokaempferol-5-O-beta-D-glucoside, beta-sitosterol, and daucosterol. Study of leaves yielded two new flavonoids, bismilachinone and smilachinin, together with 14 known compounds.

Study of rhizomes yielded 13 compounds and identified as kaemperol-7-O-beta-D-glucopyranoside (1), engeletin (2), isoengeletin (3), kaempferol (4), dihydrokaempferol (5), dihydrokaempferol-5-O-P-D-glucopyranoside (6), rutin (7), kaempferol- 5-O-beta-D-glucopyranoside (8), 3, 5, 4'-trihydroxystibene (9), vanillic acid (10), 3, 5-dimethoxy4-O-beta-D-glu-copyranosylcinnamic acid (11), beta-sitosterol (12), and beta-daucosterol (13).

**Taste:**

Slightly irritating

**Temperament:**

Murakkab-ul-Quwa,<sup>6,8</sup> hot 1° dry1°<sup>7</sup>

**Actions:**

Mulattif (demulcent), muhallil (Anti-inflammatory) muarriq (diaphoretic), muharik (stimulant), muaddil (alterative), musaffi Khoon(blood purifier), muqawwi azaeraesa (visceral tonic), muqawwi bah (aphrodisiac), musakkin (analgesic) munawwim (sedative), and mudirr baul (diuretics), Hazim (digestive), Mushil(Purgative).<sup>5,7,8</sup>

**Method of processing:**

As the drug is free from any toxic side effects, it is used directly either in form of powder alone or in combination with other drugs.<sup>7</sup>

**Therapeutic uses:**

The drug is used in aathishak (syphilis), juzham (leprosy), fasad dam (impurity in blood), amraze asab (nervous disorder), and waja-ul-mafasil (rheumatism), amraze kuliya-wa-masana (kidney and bladder disease) istirkha (paralysis), suda (headache), Constipation, skin disease, Parkinsonism, ulcers<sup>7,9,12,13</sup>

**Doses:** 6gm. Powder.<sup>7</sup>

**Substitute:**

Ushba maghrabi (*Smilax aristolochopholia miller*).<sup>5,7.</sup>

**Corrective:**

Anar.<sup>7,14</sup>

**Important formulation:**

Majun-e-Chobchini

**SCIENTIFIC REPORT**

- Anti-Inflammatory / Antinociceptive / COX Inhibition: Study in rats of aqueous extract of tubers of Smilax china showed anti-nociceptive and anti-inflammatory effects. Results showed inhibition of both COX-2 activity and COX expression<sup>15</sup>.
- Chemical Constituents: Study of rhizomes isolated 13 compounds: kaempferol-7-O-beta-D-glucopyranoside, engeletin, isoengeletin, kaempferol, dihydrokaempferol, dihydrokaempferol-5-O-P-D-glucopyranoside, rutin, kaempferol-5-O-beta-D-glucopyranoside, 3, 5, 4'-trihydroxystibene, vanillic acid, 3, 5-dimethoxy-4-O-beta-D-glucopyranosylcinnamic acid, beta-sitosterol, and beta-daucosterol<sup>16</sup>.
- Nephroprotective / Anti-Hyperuricemic: An ethyl acetate fraction exhibited strong anti-hyperuricemic activity. Caffeic acid, resveratrol, rutin and oxyresveratrol isolated from the EAF showed different inhibitory effects on xanthine oxidase in vitro. The EAF also prevented renal damage against tubulointerstitial pathologies in hyperuricemic rats<sup>17</sup>.
- Anticonvulsant: Results of study of ethanolic extract and ethyl acetate fraction of the rhizome of SC in mice showed it may help control petit mal and grand mal seizures<sup>18</sup>.
- Sieboldogenin / Anti-Inflammatory: Study isolated sieboldogenin from ethyl acetate fraction of the plant crude extract. Sieboldogenin showed significant lipoxygenase inhibition and significant inhibition of carrageenan-induced hind paw edema and presents as a potential new anti-inflammatory compound<sup>19</sup>.
- Stilbenes / Antioxidant: Study isolated 3 compounds: resveratrol, oxyresveratrol, and 3, 5, 3',4' - tetrahydroxylstilbene. The compounds showed strong antioxidant activity and effective scavenging of DPPH free radicals<sup>20</sup>.
- Circulatory Benefits / Coagulation Effects: Study results conclude S china has a pharmacologic benefit on promoting circulation which may be from inhibition of platelet aggregation and prolongation of clotting time<sup>21</sup>.
- Flavonoid Glycoside / Anticancer: Study of eight crude extracts of Smilax china showed a fraction rich in flavonoids to show good activity against HeLa cells. Study isolated

kaempferol-7-O- $\beta$ -D-glucoside, a flavonoid glycoside, and exhibited marked anticancer activity. The antiproliferative effect may be due to cell cycle arrest at G1 phase and induction of apoptosis<sup>22</sup>.

- Anti-Diabetic: Study of various extracts of roots were evaluated for hypoglycemic activity in alloxan-induced diabetic Wistar rats. Alcoholic and aqueous extracts showed significant blood glucose reduction. A petroleum extract exhibited very weak anti-diabetic activity<sup>23</sup>.
- Antioxidant / Antimicrobial: Various leaf extracts were evaluated for antioxidant and antimicrobial activities. The ethanol extract showed the highest DPPH, ABTS radical scavenging activity, and reducing power. All extracts inhibited the growth of *Listeria monocytogenes*, *S. aureus*, and *Salmonella typhimurium*. Results suggest potential use in the food and cosmetic industry<sup>24</sup>.
- Antioxidant / Phenolic Composition: Various extracts were tested for radical scavenging and antioxidant activities. The ethyl acetate fractions showed the highest antioxidant activity, correlating with the high phenolic levels, particularly catechin and epicatechin<sup>25</sup>.
- Anti-Diabetic / Rhizomes: In a study of various extracts in rats with alloxan-induced diabetes, the hydroalcoholic and aqueous fractions exhibited anti-diabetic activity<sup>26</sup>.
- Antihyperglycemic / Antihyperlipidemic: Study of a hydroethanolic extract of *Smilax china* in alloxan-induced diabetic rats showed pretreatment for 30 days reverted the biochemical parameters almost to normal<sup>27</sup>.
- Testicular Antioxidant Activity / Spermatogenesis Benefits: Rats subjected to forced swimming stress showed increase lipid peroxidation and decrease in testicular SOD, catalase, sperm count, viability and motility. Results showed pretreatment of rats with rhizome ethanol extracts showed good protection against testicular antioxidant activity and improved spermatological parameters<sup>28</sup>.
- Antihepatotoxic / Roots: Study evaluated a methanolic extract of roots against CCl<sub>4</sub>-induced hepatotoxicity in albino rats. Results showed a dose-related protective action against CCl<sub>4</sub>-induced liver damage with significant effect on serum enzyme levels and morphological parameters supported by histopathological changes. The hepatoprotection was attributed to the flavonoid content<sup>29</sup>.
- Effects on Nicotine-Induced Endothelial Dysfunction: Study investigated the effects of 10 compounds isolated from a 70% EtOH extract of *Smilax china* on nicotine-induced endothelial dysfunction in human umbilical vein endothelial cells. Kaempferol, kaempferol 7-O- $\alpha$ -L-rhamnopyranoside, puerarin and ferulic acid showed strong inhibition of vascular

cell adhesion molecule expression, while kaempferol, kaempferin and caffeic acid attenuated intercellular adhesion molecule expression. There was also up-regulated expression of endothelial nitric oxide synthase and inhibitory effects on inducible NO synthase (iNOS) expression, inhibition of IL-8 and IL-1 $\beta$ . Results showed the potential of the isolated compounds in reversing the toxic effect of nicotine on the endothelium<sup>30</sup>.

- Anti-obesity Effects: Study investigated the lipolytic actions of a water-soluble fraction of Smilax china leaf ethanol extract in 3T3-L1 adipocytes. Results showed potential anti-obesity activity, which may be due, at least in part, to stimulation of cAMP-PKA-HSL signalling. The wsSACLE-stimulated lipolysis induced by signalling is mediated by activation of  $\beta$ -adrenergic receptor<sup>31</sup>.
- Anti-Diabetic / PTP1B,  $\alpha$ -Glucosidase and DPP-IV Inhibitory Effects: Study of leaves isolated two new flavonoids, bismilachinone and smilachinin, together with 14 known compounds, from the leaves of Smilax china. Compounds 4, 7, and 10 showed moderate DPP-IV inhibitory activities, while compounds 3, 4, 6, 11, 12, and 16 showed strong PTP1B inhibitory activities. Compounds 2-7, 11, 12, 15, and 16 showed  $\alpha$ -glucosidase inhibitory activities. Results show the leaves of Smilax china may contain antidiabetic compounds<sup>32</sup>.
- Apoptosis in Ovarian Cancer Cells / Rhizomes: Study investigated the effects of rhizome extract of SC on ovarian cancer cells A2780. The rhizome extract suppressed A2780 cell proliferation in a dose-dependent manner ( $p < 0.05$ ,  $p < 0.01$ ), arrested cells in G2/M phase and induced apoptosis by activating cspse-3, PARP and Bax. SC rhizome extract effectively inhibited NF-kB, induced apoptosis, and reduced chemoresistance to cisplatin and adriamycin in ovarian cancer cells, which may be the molecular basis for the treatment of ovarian cancer<sup>33</sup>.
- Herb/Drug Interactions: (1) Interacts with digoxin (Lanoxin) increasing the absorption of digoxin. (2) Sarsaparilla might also decrease the elimination of lithium from the body<sup>34</sup>.
- Hypoglycemic / Hypolipidemic: Study evaluated the anti-diabetic effects of methanol extracts of Smilax chinensis in alloxan-induced diabetes rats. Results showed significant reduction of blood glucose ( $p < 0.01$ ) in a time-dependent manner. Extract treated groups also showed significant reduction ( $p < 0.01$ ) in serum levels of total cholesterol and triglycerides<sup>35</sup>.

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