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Review Article

**ENTIRELY GONE OUT USEFUL PLANT –ARTEMISIA CINA****R. B. Saxena**Drug Standardization Research – Section, Central Research Institute (Ayurveda & Hospital), Aamkho,  
Gwalior-474 009 (India).**Abstract:**

*The species subjected to the study belong to Asteraceae family, Artemisia genus found in Romania's spontaneous flora. Artemisia cina plant is a hardy shrub, perennial and flowering in the autumn. The drug is made up of undeveloped flowers, calyces and fragments of peduncles, mixed with foreign matters. It is imported from Barbary and Levant; the later being deemed the best, being less adulterated, and of a greenish hue, and smooth; while that from Barbary is grey and downy. The sementine or worm-powder is not gathered like our seeds. The plant grows in the meadows, and must be ripen; and mischief is that, as it grows near to maturity, the wind scatters a good part of it among the grass, where it is lost, and this makes it so dear. As they dare not touch it with the hand, for fear of making it spoil the sooner, when they would gather what was left in the ear, they have recourse to this expedient : they take two hand-baskets, and walking along the meadows sweep the basket, the one from right to left, the other from left to right, as if they were mowing; by this means the seed is shaking out into the baskets. The adulterations are the seeds of the Tansey ( Tanacetum vulgare ) and the mugwort ( Artemisia vulgaris ). The later are known from being of bright yellow colour, and resembling powdered hay.*

**Key Words:** *Artemisia cina, Geographical area, Asteraceae, Popular cultural, Chromosome, Santonin, Substitute,*

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## INTRODUCTION [1-15]

We are often asked about plants for humming bird attraction. Unfortunately *Artemisia cina* does not attract these beautiful humming bird, subbird or nect or feeding vatricities of garden birds. Impressive Autumn foliage display is not shown by *Artemisia cina* so looked for an alternative plant for pleasing fall leaf properties. *A. cina*, Santonica, Levant wormwood is not known butterfly attracting plant. *A.cina* commonly known a Santonica (Zahr el shieh el-khovasani), wormwood and worm seed, is an herbaceous perennial of the daisy family. Its dried flower – heads are source of the vermifugic drug santonin since ancient name. The common names arise from its known ability to expel worm. The pronunciation is san'tonika, which is noun. The plant *Artemisia* is of Turkestan. Now Latin, from Latin (Herba) santonica, from feminine of santonicus of the santoni, a gallic people of Aquitania. Asteraceae is a hung family of flowering plants with more than 1600 genera nearly 24000 species. *Artemisia* is substituted by a tall aromatic shrub, known as *Artemisia vulgaris* Linn. (composite) found all mountaneous district of India : Mount Abu- in Rajasthan is known, Uttar Pradesh, Tamil Nadu, Uttarakhand, Jammu and Kashmir, Sikkam and Sri-Lanka, to an altitude of 1000 meters. The study of this useful plant is not found in Ayurveda and accepted the name of Santonin. A homeopathic remedy made from the plant is used to rid childrens of worms. *A.cina* plant is very useful in vermifuges, febrifuge, anti-biotic, anti-septic, anti- rheumatic, anti- malaria, anti- spasmodic, anti- inflammatory, analgesic, bile stimulant, regulation, urine stimulant, anti-tumor, fragrans, etc. The detail study of *A.cina* plant, i.e. history, vernacular names, distribution, description, popular culture, chemical composition, chromosome numbers, clinical observation, identification, uses, hazards etc. been discussed.

## GEOGRAPHICAL DISTRIBUTION

Asia- Minar, the Levant, Africa, Barbary, Persia, frontiers of Muscov. The different species over most parts of Europe.

## HABIT [16-18]

*A. Cina* plant grow in temperate climates of North and South Hemisphere, usually in dry or semi-dry habitates

They can be found from the Aretic alpine or mountains are as to the dry desearts, and dominate the steppe communities of Asia, South Africa and New world. In the tribe Anthemideae of compositae along with *Achillea*, *Anthemis*, *Chrysanthemum*, *Matricaria*, *Santoling* and *Tanacatuns*- the genus *Artemisia* compares some 300 species that is northern temperature regions southern Africa and south Amrica. Members of this genus are common on arid soils of the western United States and of the Russia stepps. Many species are

wind pollinated, although there is evidence of insects pollination in some species because on their having colourful capitaly sticky pollen. Some species are self-pollinated. *Artemisia cina* is also known by its common name of cina. It is deciduous shrub in areas such as East Asia- Russia, Turkestan. *A. cina* is a plant whose flowers bloom typically in 8-10 and is pollinated by wind.

The plant should best propogated by seed-surface show from late winter to early summer in a green-house. When large enough to handle, prick the seedling out into individual pots and plant out in the summer cutting of half-ripe wood, July/ August in the frame. Division in spring or autumn. Parts of *cina* are considered toxic.

## SOURCE OF HISTORY [19, 20]

Ancient legend states that wormwood (*Artemisia* genus) plants grow along the path that diabolical snake took when he exited the Garden of Eden as a barrier to his return. Throughout the ages since it has been known as a bitter herb. In the old testament it figures prominently as the bitter results of sinful ways and 'Bitter as wormwood' was commonly state.

## HISTORY OF WORMWOOD [21-29]

The name wormwood is derived from ancient use of the plant and its extracts as an intestinal anthelmintic. In Pakistan's indigenous medicinal systems, the leaves and flowering tops are used as an anthelmintic, anti-septic, febrifuge, stomachic and to alleviate chronic fever, dyspepsia and hepatobiliary ailments. Anethobotanical study in Turkey documents the plant's use as an a bortifacient, as a blood depurative and in treating stomach aches. It has also been used as an appetizer. Caribbean folk medicine documents the use of wormwood for menstrual pain, vaginitis, and other unspecified female complaints. Extracts of the of the plant are used as a bitter seasoning for food and added drinks such as beer, tea or coffee. In western European traditional herbal medicine, wormwood was recommended for gastric pain, cardiac stimulation, and to restore declining mental functions. French and Spanish New medicine used the plant species along with other plants as an emmenagogue. In traditional Chinese medicine, practitioners treated acute bacillary dysentery by applying fresh and dried absinthium. A poultice of the plant has been used medicinally for tendon inflammation, and wormwood tea was used traditionally as a diaphoretic.

Wormwood extract is the main ingredient in absinthe, toxic liquor that induces absinthism, a syndrome characterized by addiction. 'G' problems, auditory psychiatric illness and suicide. The drinks have been banned in several countries, but in 19<sup>th</sup> century, absinthe-base liquor was known for its aphrodisiac and healing

properties and also was reputed to stimulate creativity. The emerald – green colour of absinthe liquor came from chlorophyll; however, copper and antimony salts were reportedly added as colorants to inferior batches, with toxic consequences. Thujone-free wormwood extract is currently used as flavoring, primarily in alcoholic beverages such as vermouth.

### ANCIENT HISTORY [30]

1. The whole family is remarkable for the extreme bitterness of all parts of the plant: as bitter as wormwood` is very ancient proverb.

2. In some of the western states of north America there are large tracts almost entirely destitute of other vegetation then certain kinds of *Artemisia*, which cover vast plains. The plants are of no use as forage : and the few wild animals that feed on them are said to have, when eaten, a bitter taste. The *Artemisias* also abound in the arid soil of the Tartarean steppes and in other similar situations.

3. The genus is named *Artemisia* from Artemis, the Greek name for Diana. In an early transtation of *Herbarium* of Apuleius we find` of these worts that we name of Artemisia, it is said that Diana did find them and delivered their powers and leechdom to Chiron the centeur, who first from these worts set forth a leechdom and he named these worts from the name of Diana, Artemis i.e. Artemisias .

4. Common wormwood held a high reputation in medicine among the Ancients. Tusser (1577), in July`s Husbandry, says: ` while wormwood hath seed get a handful or twaine. To save against March, to make flea to refraine: where chamber is sweeped and wormwood is strowne, what saver ia better (if physic be true) for places infected than wormwood and Rue? It is a comfort for hart and the Braine and therefore to have it is not in vaine`. Besides being strewn inchambers as Tusser recommended, it used to be laid among stuffs and fur to keep away moths and insects. (05) According to the ancients, wormwood counteracted effects of poisoning by hemlock, toadstools and biting of the seadragon. The plant was of some importance among the Mexicans, who celebrated their great festival of the Goddess of salt by ceremonial dance of women, who wore of their heads garlands of wormwood. (06) with the exception of Rue, wormwood is the bitterest herb known, but it is very wholesome and used to be much request by brewers for use instead of hops. The leaves resist putrefaction, and have been on that account a principal ingredient in anti-septic fomentations. (07) An old love charm : (A) on st. luke`s day, take marigold flowers, a sprig of marjoram, thyme and a little wormwood; dry them before fire, rub them to powder; then sift it through a fine piece of lawn, and simmer it over a slow fire, adding a small quantity of virgin honey, and vinegar. Anoint yourself with this when you goto bed, saying the following lines three

times, and you will dream of your partner`` that is to be``. St. luke, st.luke, be kind to me. In dreams let me my true-love see`. (B) Culpepper, writing the three wormwoods most in use, the common wormwood, tells us: ` Each kind has its particular virtues the common wormwood is` the strongest`, the sea wormwood, the second in bitterness, where the Roman wormwood, ` to be found in botanic gardens`- the first two being wild -joins a great deal to aromatic flavor with but little bitterness`.

### HISTORY OF ARTEMISIAE AND ARTEMISIA [31-36]

Artemisiae: The Artemisiae, to which sub-division belong the drug known as *cina* in the Homeopathic Materia Media, held a prominent place among the medicinal substances of the ancient physicians, from Hippocrates to Scrapion. They were chiefly recommended as febrifuge, stomachic and anthelmintic. In modern times,under the allopa5thic school, *cina* has entirely gone out of use. The modern Greek pharmacopoeia contains two species, which are described under the names *Artemisia absinthum* and *Artemisia contra*. The later is the *Artemisia santonica* or *contra* of Linnaeus, its name being an abbreviation of *contra vermes*. Landely says that the drug called Semen contra or Semen cinae is made up of the flower-heads of many species of Artemisia; those which form the principal part of this substance are *A.sieberi*, *A. larcheana*, *A. contra* and *A. paniciflora* : the flower-heads of *A. vahliaria* also furnish one of the kinds of wormseed, called Semen cinae Levanticum or Semen cinae in grains. It was formerly supposed that the virtues of the *Artemisia contra* as a vermifuge resided in the bitterness of the extract; but according to the experiments of Baglivi and Redi, lumbrici immersed in the fusion by this substance were killed in five to seven hours; whilst in an infusion of wormwood they continued to live for thirty hours and up wards. So that the vermifuge effects could not wholly depend upon the bitterness of this substances.

Artemisia: (1) The botanical classification of this genus, of some 100 species, was derived from *Artemisia*, the sister and wife of the Greek/Persian king Mausolus, and ruled after the death in 353 BCE. Artemisia was noted botanist and medical researchers, and to honour her husband/brother, she built a mangnificant tomb called the Mansolem, which was one of the seven wonders of the ancient world. Artemisia is a latin term for ` mugwort`. The Louisina name refers to the vast Louisiana territory rather than the state. (2) The genus is named after the Greek goddess ` Artemis`, in 1531, the Brunfel`s Herbal, mentioned wormseeded as being imported by way Genoa; it was employed in Italy under the name of Semenzina (diminutive of semana seed), in the brief that it consisted of small seeds. From the word is derived the name of Semen cinae, by which the drug id often known,

Semen contra (another names) is an abbreviation of Semen contra vermes. (3) In an ancient Greek text of Dioscorides, wormwood is mentioned as a remedy for expelling intestinal worms and thus its name. (4) Native American tribes used the wormwood extensively for medicinal purpose treating all manner of illnesses and for cleansing body in purifications rites. The Lakotas used wild sages extensively and had names of seven different species as well as two names for the white sage. The Lakota men used the white sage and wormes used the dwarf sage brush for protection against evil influences.

#### DESCRIPTION OF ASTERACEAE [37-47]

The Latin name `Asteraceae` is derived from the type genus Aster, which is Greek term that means star. `Compositae`, an older but still valid name, means compositae and refers to the characteristic inflorescence, a special type of pseudanthium found in only a few other angiosperm families. The study of this family is known as Synantherology. The vernacular name daisy widely applied to members of this family, is derived from its old English meaning daegesege, from daeges eage meaning `day's eye`, and this was because to the petals (of *Bellis perennis*) open at dawn and close at dusk.

Asteraceae have cosmopolitan distributions, and found everywhere except Antarctica and the extreme Arctic. They are especially numerous in triplid and sub-tropical regions (notably Central America, Eastern Brazil, the Andes, the Mediterranean, the Levant part of the Middle East, Southern Africa, Central Asia and Southern China).

Asteraceae is one of the largest plant families having 2 sub-families, 13 tribes, 1100 genera and about 27000 species. It occurs throughout the world with great diversity in the semi-arid tropics (not abundant in the tropical rain forest). Asteraceae is a taxon of dicotyledonous flowering plant. In addition to the daisy and members of *Artemisia*, other well-known members of the family include lettuce, Chicory, globeartichoke, safflower dandelion, ragwort and sunflower. Plants belong to the Asteraceae inflorescence about compositae or Asteraceae: (1) Inflorescence is an involucre capitulum (flower head). (2) Tubular/disc florets are anti-morphic, ligulate/ray florets are zygomorphic. (3) Anthers are syngenesious i.e. with the stamens fused together at their edges, forming a tube. (4) The ovary has arrangement of the ovules. (5) One ovule per ovary. (6) The calyx (sepals) of the florets are modified to form a pappus a tuft of hairs, which often appears on the mature fruit. (7) The fruit is an achene. (8) The essential oils sesquiterpens are present, but iridoids are lacking.

#### DESCRIPTION OF ARTEMISIA [48-64]

*Artemisia* has a colourful and rather dubious history. *Artemisia* was the wife and sister (yes, that is correct) of

the Greek/Persian king Mausolous from which got the word Mausoleum. The genus *Artemisia* was named after her includes over 500 plants. *Artemisia* was a botanist and medical researcher. Many *Artemisia* species produce aromatic oil, and several are culinary herbs or used as flavorings, hallucinogenic, vermifuges and pharmaceutical and some are toxic. *Artemisia* produces anti-malarial drugs. Artemisinin appears to selectively kill human breast cancer cells. Some members are fringed by ungulates, rodents, birds and insects. It is used as an indicator of steppe climates. Roman wormwood is less toxic and is used to flavor and drinks vermouth and campari. A sachet made of wormwood. Did you know that the delectable herb tarragon is the *Artemisia* genus.

#### VERNACULAR NAMES OF ARTEMISIA AND ARTEMISIA CINA [19, 65-71]

*Artemisia*: Azrbaycana – Yovsan, Catala – *Artemisia*, Esky- Pelynek, Dansk – Bynke, Deutsch – Beifub, Eesti-Puju, Esperanto – *Artemizio*, Francais – Armoise, Frysk – Aalst, Hornjoserbsce – Balica, Ido – *Artemizio*, Italiano – *Artemisia*, Kreyolayisyen – Baleame, Latin – *Artemisia*, Latviesu – Vibotnes, Lietuvi- kietis, Magyar-Urom, Nederlands – Alsem, Norsk (bokmal) – Mainrtslekta, Polsko- Bylica, Portugus – *Artemisia*, Suomi- Marunet, Svenska – Molortsslaktet, Tagalog – Damong- Maria, Tringvit \_ Chi Nagai.

*Artemisia cina*: commonly known as santonica (zahr el shieh el-khorasani), Leavan wormseed and wormseed, is an herbaceous perennial of the: -Santonica: may refer to santonica, the common name for the plant (*A. Cina*).

Santonica: a dry form used to expel intestinal worms.

*Artemisia ex. Roxb Artemisia caucarica* wild *Artemisia chamaelifolia* vill, *Artemisia cina* o. berg & c.f. Schmidt-santonica- It is derived from santonica (the unexpanded flower heads of *Artemisia maritime* var. *stechmanniana*, the other refer to *A. cinara*).

Folk name: kills worms and parasites, kirmaani Ajawaayin, kirmiwaa, kirmiajmo.

Synonyms: cina, cin, *A. contra*, *A. lercheana*, *A. maritime*, *A. santonica*, Sea wormwood, Santonica, Semen, Semen contra, Semen cinae, Semen cynae, Semen sanctum, Semen santonici, Seusinae, Seu contra vermes, Seu lumbricorum, Semen zedoariae, Sementina, Sementinae, *Artemisia austriaca* Jacq. Absinth, Steellmanniana, Tartarian, Southern-wood, Worm seed, Wormwood, *Artemisia chamaemclifolia* (Italian) Semezzina, *Artemisia santonica* Linn.

**Common names of different countries:** Arab – Afsantin-ul-hahr, Chinese – Qinghaosu, jing hao, Ching hao, quing hao, qing hao su, He-shi, He-sw. Danske and

Dutsch – *Artemisia cina.*, English – Sweet annie, Wormwood, Sweet wormwood, Sweet sagwort, Annual mugwort, Annual wormwood, Santonica, Wormseed, Levant wormseed, Santonica wormwood, Sea wormwood, Sea wormseed, Centonique, Chamoniile-leaved artemisi, Horasani. Espanol – *Artemisia cina*, Finish – Kesamaruna, Vikkamaurna, French – Arnoise, Semen contra, Barbotine, Sementine, Graine de zedoariae. German – *Artemisia*, Wermut, Einjahriger beifuss, Zittersaame, Wurmaame. General – Zitwer. India – *Artemisia maritime* Linn. (i) Ayurved – chauhaara, kirmaaniyavanni, Chuhaariajwaayan (not related to Ajawaayin), (ii) Unani – Dirmanah, Kirmaalaa, Afsanteen-ul-bahar (Dirmanah Turki is equated with *A. stechmaniaka* Besser. (iii) Hindi-Kirmala, Kiramaniowa. Indonesia – Mangsi Arab. Italy- semesanuto. Italiano-Nederlands and Norske – *Artemisia cina*. Poland-Cytwrosoc-nasiene. Postuguese- losnadoce. Portugues – *Artemisia cina*. Spanish-Ajenjo, Tomillo Blanco. Sri Lanka – Santonica. Swedish – Sommarmalort, Maskfro. Suomalainen and Svenska – *Artemisia cina*. Turkee – Horasni.

Common : *Artemisia contra*, Tarlarian southernwood, Wormseed, *Artemisia santonica* Linn., Levant, Sea wormwood, *Artemisin resquiterpine lactones*, Santonica wormwood, tomrillo Blanco, Wurmsamen, Zittwer-wermut, Levent wormwood, Contonique, Chamomile-leaved atemisi, Levant wormseed, Horasani, Semencina, Armoise of Judaea, Santonica. Scientific, Botanical, Zoological and Mineralogical – *Artemisia cina*. Remedy – Cina.

### ETYMOLOGY [72]

Modern Latin from Latin *santonicus* from *santoni*, tribe to the Gauls.

### NOMENCLATURE [73]

Wormwood : It is also somewhat enigmatic, so certainty name of the plant indicated by the Hebrew *la'anah* in seven verses. However, since it is linked with gall in two instances we might assume that a different plant is meant. Again, it should be bitter plant as required in the verses, be made into a decoction, and be drunk without poisoning. Wormwood is mentioned in only one verse in the new testament, in Revelation 8 : 11 where a star is called wormwood. The Greek word is *aspinthos* and implies a biter or poisonous plant. This verse clearly indicates that some who drank of the wormwood died, suggesting that it is toxic. Of course, we must take into account the highly symbolic imagery of Revelation before trying to assign a botanical name of the wormwood.

The native plant in the Middle east will conform to the characteristic of wormwood in the Bible ? Most studies on Bible plants implicate a woody shrub in the sunflower

family known in English as wormwood, *Artemisia herba-alba*. Wormwood has been known as a medicine since ancient times. A decoction of the leaves is used to cure intestinal worms, hence the common name.

A flavoring for alcoholic drinks is made from wormwood and is known in English as absinthe, directly derived from the Greek word used in the New testament. It is also known as `bitters` for obvious reasons. It has an intensely bitter taste which probably adds to its desirability as medicine with the philosophy that anything that tastes that bad must be good for you`.

### WHY WORMSEED CALL SEMEN CINAE? [74]

Wormwood has long been used as an anthelmintic. Tragus ( 1531) in Brunfel`s Herbal, mentions wormseed as being impoted by way of Genoa; it was employed in Italy under the name *Semenzina* ( diminutive of *semenza*, seed), in the bolief that it consisted a small seeds. From this word is drived the name of *semen cinae*, by which the drug is often known: *semen contra*( another of its name) is a abbreviation of *semen contra vermes*. The drug at first sight appears to consist of number of small brownies, ridge seeds, and it is not till they are closely examined that their true nature becomes apparent.

### ARTEMISIA IN POPULAR CULTURE [75-77]

It has been mentioned and used in popular culture for centuries. A few examples are given : (1) wormwood is the ` name of star` in the book of Revelation that John the Evangelist evisions as a cast by the angle and falling into waters, making them undrinkably bitter. (2) bible show that wormwood was common herband that its awful taste was known as a drinkable preparation applied for specific reasons. This makes sense since the people of those days lived so much closer to the groundal must have appreciated the effects of wormwood to control parasites. (3) In the Roald Dehl novel *Matilda* was last name of the wormwood. (4) Shakespeare`s hamlet, the titular character says` wormwood`, wormwood to comnet or the figurative bitterness of what some one has just said. (5) Some authors thought that Chernobyl translates as `wormwood` is the above sense of `Apsinthos`, which is `Absinth wormwood`. However, the correct translation is `mugwort`, sometimes reffered to a as `common wormwood`. (6) Wormwood is junier devil in ` the screwtape letter`, novel C.S. Lewis on human temptation. Miss wormwood is the name of calvinls in Calvin and Hobbes , a former daily strip by Bill Watterson. (7) In Harry Potter, the draught of Living Death, an extremely powerful sleeping potion, is make from powdered root of asphodel added an infusion of wormwood. (8) The series of unfortunate Events, there is saying that` tea should be bitter as wormwood and sharp as a two-edged sword`. (9) The bitterness of the plant lead to its use by wet-nurses for wearing infants from the

breast, as in this speech by Shakespeare from Romeo and Juliet.

### DESCRIPTION [60, 78-84]

Habitat : The plant is indigenous of Iran, Turkestan and the Kirghizin steeps around Bucharra production : wormwood flowers are the inflorescent buds of *A. cina*. The medicinal parts are closed flower-buds, that have not yet blossomed. Habitus: Bush, on an annual, high CA, 15 cm. Stem: wet, evergreen, perennial, semi-shrub, cylindrical, hairy, 30 to 60 cm. high with many slim sprouting stems, greenish white, pinnate, the sprouting stems are smooth and woody and the leaves pinnatifid on the non-flowering branches. The leaves on the flowering branches are small and entire-margined. Stem branches are undivided, pinnate, linear, and multifid. Knarled rhizome: produce numerous leaf and flower branches. Leaf : single, pinnate, linear, multifid, upper surface, the surface of the bottom of the green, the dense hairy, four bertorch, stalk + /- 3 cm. hairy, greenish white upper surface green, green to whiteish underparts. Pappus: None. Epicalyces: numerous oblong-obtuse, imbricate scale. Calyx : Imbricated with rounded covering scales. Flowers : compounds, on the tip of the stems and leaf axil, numbers flower-heads about 2 mm. long with diameter 1.5 mm. When fresh ovoid and greenish-yellow, later brownish-green, bertangkai, berickatan, contain 3 to 5 minute, tubular, androgynous florets with a slim, cylindrical and glabrous receptacle, hairy petals crown, revel, dirty white. Florets : of the ray non. Pollen grains : spherical, which are typical in compositae family, a fibrous layer on theanthers, lignified, elongated, hypodermal sclerides on cluster of the calcium oxalate crystals. Root : riding , dirty white.

### CHROMOSOME NUMBERS [85-91]

*A.Cina* is a medicinal plant species producing bio-active compounds which are potential as anti-tumor, anti-fungal, and anti-bracterial. Untransformed and transformed roots, had instability in the chromosome, but had the modal number of chromosome  $x=8$  with the diploid number of  $2n = 4x = 32$ . The chromosome numbers of the *Artemisia santonica* L. are diploid i.e.  $2n = 18,36$  while *Artemisia santonicum* L. is 36. *A. santonica* – Russia, Republic of kalmikya system & sarzhn lakes, hill near khanat, A.A. Korobov, 8x 2000(L.E.)  $2n=18$  while Russia, volgogradskaya oblast system of Sarzhn lakes, hill near Glabokii-ovrag A.A. korobkov, 7x 2000 (L.E.)  $2n = 36$ .

Russian material confirms the extence two ploidy levels in the species. This diplod reports agrees with many others form different territories, although this found only one previous record of the triploid level in Bulgarian plants.

Roots isolated from glasshouse plant of *A. cina* has the cells with the diploid number of the  $2n = 32$  and 46.3% of cells had chromosome numbers ranged from  $22=22$  to  $2n= 64$ . Untransformed root isolated from plantles cultured in solid media had long only 36.1 % of cells with chromosome number of  $2n = 32$ , and untransford roots grow in liquid medium had 49.4 % of cells with  $2n = 32$ . The range of the chromosome number of untransformed roots was from  $2n = 17$  to  $2n = 64$ , whilst that of transformed roots was from  $2n=11$  to  $2n= 66$ . The pollen mother cells of *A.cina* determined  $n = 9$  chromosome.

### CHEMICAL CONSTITUENTS [ 23,28,92-101]

Wormwood: It contains trace mounts of thymol and carvacrol, as well as phenolic compounds with potent anti-oxidant and free radical- scavenging activity, betaine, choline, tannis, pigments, essential oil, santonin. Seed : contains 2 % essential oil. Essential oil also known as Artemisia oil or Armoise oil. Seed also contains two crystalline substances i.e. 1.5 to 2.0 % santonin are artemisin. Leaves: alkaloid, saponin, flavonide and polyphenols, artemisinin. Essential oil : yellowish colour and penetrating, disagreeable odour, cineol 80 % dipentene ( limonera/g – mentadien – 1.8) , terpinen, pinen,  $\alpha$  and  $\beta$  – terpineol, tujone derivatives i.e. (z) thujone 0.2 % and (E) thujone 0.5 %: however the tujone content vaies widely, chamazulene 18 %, nuciferol butanoate 8 % , nuciferol propionate 5 %, caryophyllene oxide 4.0 %, tujilic alcohol 5 – 7 %, sesquiter phenol, alkaloid phenol carbonic acid : the coffic acid, flavonoids : hypsidulin, memetin, rutinin, upperground part has cyclitols : kvebrachite 0.38 %, sesquiterpenoids : a santonin 3-6 %, flavanoids ).4 – 2.03 %, large amount of aromatic compounds 41 low level of oxygentated monoterpenes 24 %. Volatile oil : The dried unexpanded flower-head of *A. cina* (and several species of Artemisia) yield volatile oil. The volatile content varies from 1.0 to 2.0 %, while the santonin is about 2.0 %, as well as phellandrene, pinene, azulene and more than six other miner components. Volatile oil contains cineole 80 %, with terpinol and carvacrol, thujone 35 %, azulenes, flavonoids, phenolic acid, lignans, pipene and resin, cis- and trans epoxy-cymenes account for up to 57 % of volatile.If the flower-heads are unexpanded and quickly dried, the yield over 3.0 % of santonin.

### PARTS USED IN MEDICINE AND MODE OF PREPARATIONS [30,74]

1. The whole substance as important, freed as much as possible from impurities. One part is infused in twenty parts of alcohol, to prepare the tincture, but it is recommended to prepare the three first attenuations by trituration, as more likely to preserve and develop the virtues of this plant. (2) Fluid extract:  $\frac{1}{2}$  to 1 drachm

.Wormwood tea, made from 1 oz. of the herb, infused from 10 -12 minutes in 1 pint of boiling water, and taken in wine glassful doses, will relieve melancholia and help to dispel the yellow hue of jaundice from the skin, as well as being a good stomachic, and with the addition of fixed alkaline salt, produced from the burnt plant, is a powerful diuretic in some dropsical cases. The ashes yield a pure alkaline salt than most other vegetable, except Beanstalks and Broom. (3)The juice of the larger leaves which grow from the root before the stalk appears has been used as a remedy for Jaundice and deopsy, but it is intensely nauseous. A light infusion of the tops of the plant, used fresh, is excellent for all disorders of the stomach, creating an appetite, promoting digestion and preventing sickness after meals, but it is said to produce the contrary effect if made too strong. (4) The flowers, dried and powdered, are most effectual as a vermifuge, and used to be considered excellent in agues. The essential oil is used as worm-expeller, the spirituous extract being preferable to that distilled water. The leaves give out nearly the whole of their small and taste both to spirit and water, but the cold water infusions are the least offensive. (5) The intensely bitter, tonic and stimulant qualities have caused wormwood not only to be an ingredient in Medicinal preparations, but also to be used in various liqueurs, of which absinthe the chief is, the basis of absinthe being absinthol, extracted from wormwood. Wormwood, as employed in making this liqueur, bears also the name `warmouth` - preserver of the mind-from its medicinal virtues as a nervine and mental restorative. If not taken habitually, it smoothes spinal irritability and gives tone to persons of a highly nervous temperament. Suitable allowances of the dilute liqueur will promote salutary perspiration and may given as a vermifuge. Inferior absinthe is generally adulterated with copper, which produces the characteristic green colour. (6) The drug, `absinthium`, is rarely employed, but it might be of value in nervous diseases such as neurasthenia, as it stimulates the cerebral hemispheres, and a direct stimulant of the cortex cerebri. When taken in excess it produces giddiness and attacks of epileptiform convulsions. (7) Dr. John Hill (1772) recommends common wormwood in many forms. He says: the leaves have been commonly used, but flowery tops are the right part. These made into a light infusion, strengthen digestion, correct acidities, and supply the place of gall, where as in many constitutions, that is deficient. One ounce of the flowers and buds should be put into an earthen vessel and a pint and a half of boiling water poured on them, and thus stands all night. In the morning the clear liquor with two spoonfuls of wine should be taken at three draughts, an hour and a half distance from one another. Whoever will do this regularly for a week, will have no sickness after meals, will feel none of that fullness so frequent from indigestion, and wind will be no more trouble some, if afterwards, he will

take but a fourth part of this each day, The benefit will be lasting. He further tells us if an ounce of these flowers be put into a pint of brandy and let to stand six weeks, the resultant tincture will in a great measure prevent the increase of gravel and give great relief in gout. The celebrated Baron Haller has found vast benefit by this.

#### **DETERMINATION OF SANTONIN FROM PLANT [102-107]**

The chief constituent of wormseed is crystalline principal, santonin, to which the anthelmintic properties of the drug is due to santonin, its maximum 2.3 to 3.6 % in the July/ August after the flower-heads have expanded, it rapidly diminishes in quantity. It is extracted from the flower-heads by treating them with milk lime, the santonin being covered into stable calcium santonate. It occurs in colourless, shining, flat prism, without odour and almost tasteless at first, but afterwards developing a bitter taste. It is sparingly soluble in water, but soluble in alcohol and ether.

#### **ACTION, MEDICAL USES, DOSAGE ANTIDOTES [69, 70, 83, 84,108-110]**

Levant wormseed is seldom used as substance in medicine, but is official source of santonin. In small dose, it is gastric stimulant, and large amounts, nervous and circularly stimulant, very large doses have produced a sense of depression, at the stomach, nausea, emesis/purgation and congestion of the brain. Wormseed is vermicide and is less apt than santonin to produce vigion. It is remedy for the expulsion of lumbricoides and rectal ascarides, and less efficient for taenia. Dose : (i) The drug always used in combination with a laxative. The average single dose is 0.025 gm. For adults. For children, take the child's age in years and double the amount in milligram of the drug. According to the Austrian pharmacopoeia, the single dose is 1 to 2 gm. The powder is administered in the morning and followed later by castor oil or sodium sulphate. The remedy is reported on the following. (ii) The dose of the powder is for 0.7 to 2.0 gms., 3 times a day in syrup, honey, similar fluid, in combination with a purgative such as Jalpan etc. (iii) Take 3-10 drops of oil mixed honey three times a day for 3 or 4 days. (iv) The whole seeds can be crushed and taken in half-tea spoonful dose mixed with honey. This should be followed by an herbal laxative such as cascara bark. (v) Ayurved : santonin is toxic at 60 mg. for children and 200 mg. in adults. (vi) Homeopathic : 5 to 10 drops, a tablet, 5 to 10 globules, 1 to 3 times a day or 1 ml. injection solution twice weekly Sc ( HAB 34). (vii) Over dose: Deadly poison followed the intake or less than 10 gm. Of the drug are known. (viii) Antidotes: Bryonia, China, Hyoscyamus, and Ipecacuanha.

#### **POWDER, TEST FOR PURITY [111]**

Powder is made from its plant with aromatic odour, has grayish green colour and bitter in taste. Boil 1 gm. Finely powdered drug with 10 ml. alcohol, heat, cool and filter. To the filtrate, add sodium hydroxide and heat again. The liquid develops red colour.

### QUALITY CHARACTERS OF ESSENTIAL OIL [112-113]

**Organoleptic properties:** (i) **Appearance** – fluid liquid. (ii) **Colour**- pale yellow or lightly greenish. (iii) **Aroma** – powerful, fresh- camphoraceous, somewhat green or bitter sweet. **Physico-chemical properties:** (i) **Content** – 0.70 -1.61. (ii) **Density** at 20° 0.9780 – 0.9880. (iii) **Specific gravity** – 0.8786 – 0.9265 at 25°c. (iv) **Optical**

**Rotation** – [-] 13.25° to [-] 29.35° at 25° c. (v) **Refractive index** – 1.3530 – 1.490 at 25°c. (vi) **Acid value** mg. KOH 2.49 to 6.5. (vii) **Ester number** mg. KOH – 25.05 to 55.0. (viii) **Ester value** after acetylation – mg KOH 65 to 90 (ix) **Saponification** mg KOH – 14.9. (x) **Solubility** – insoluble in alcohol.

### USES [1, 28, 30, 39, 55-56,100, 114-148]

(01) Trivial: (i) Shakespeare often refers to wormwood in Hamlet. (ii) As bitter as wormwood is a common expression. (iii) Wormwood (Apsinthes in the Greek text) is the name of the `Star` in the Book of Revelation (8:11) (**kai onoma tou Asteros legetai ho Apsinthos**) that John and Evangelist evision casting the angel and falling in the waters, making them undrinkably bitter.out side of the Book of Revelation , there are upto eight further references in the Bible showing that wormwood was a common herb of the area and itsawful taste was known, as drinkable preparation applied for specific reasons. (iv) The word Chernobyl properly refers to *A. vulgaris* (Mugwort). Some authors claim the Chernobyl Disaster relates to the above sense of `Apsinthos`,, which is probably *A. absinthum* (Absinth wormwood). (v) Wormwood a junior devil in the **Screwtape Letters** character (vi) In Russian culture, the fact that *Artemisia* species are commonly used in medicine and their bitter taste is associated with medicinal effects has caused wormwood to be seen as a symbol for a `bitter truth` that must be accepted by deluded ( often self – deluded) person. This symbol has acquired a particular poignancy in Modern Russian Poetry, which after deals with the loss of illusory beliefs in various ideologies. (vii) *Artemisin* (from Chinese wormwood) is the active ingredient in the anti-malarial combination therapy `coartem`, produced by Novartis and the WHO. (02) **Japan:** yomogi (mugwort) is a vital ingredient of **Kusamodi** (rice cake with mugwort) and **hishimochi** (lozenge rice cake) which is served at the Doll`s Festival in March. In addition, the fuzz on the underside of the leaves in gathered and used in

Moxibustion. In some regions, there is an ancient custom of hanging mugwort and Iris leaves together outside homes in order to keep evil spirits away. It is said evil spirits dislia their small. Its juice is effective at stopping bleeding lowering fevers and purging the stomach of impurities. It can also be boiled and taken to relieve cold and coughs. **Recipe for kusamuchi** (rice cake with mugwort): (i) mugwort leaves 100 gms. (ii) Baking a pinch.(iii) rice powder 200 gm. (iv) boiling water 160 – 180 gm. (v) red bean paste 200 gm. (vi) soyabean flour – to taste (vii) sugar – a pinch. **Preparation:** Wash mugwort leaves, and put them with a baking soda in a pot of boiling water. Boil for one or two minutes, drain the leaves and grind them in a mortar. Mix the boiling water with the rice powder and knead it until it becomes soft. Put the rice dough into a steamer and steam for about fifteen minutes. Knead the steamed rise dough together with mugwort. From it into balls and fill them with red bean paste. Sprinkle soybean dloor on the rice cakes. (03) **Wild vegetable** : *A. santonica* is bitter wild vegetable local people live by eating it during the hard lived period. Its root is white. This work inspired by the bitter test from this plant. It makes thinking of those women and children who live in such bitter wormwood- like environment. Local people told that it is a very strong plant.(04) **Elixir of Artemis soap for beauty** : Flat, irregular, marbled gold. The heady aroma of this autumn-flowering herb gives this soap a festive note. A touch of ground turmeric roots adds of joyous yellow hue. **Ingredients** – Palm oil, water, coconut oil, hemp oil, wild almond oil, sodium hydroxide, essential oil of *Artemisia cina*, , pomegranate seed oil, castor oil, grape fruit seed extracts, additional lugo. (05) **Seed** : Wormseed is one of the oldest most common anthelmintics especially for the children. In domestic practice the seeds are used powdered combined with honey or treacle, the dose of the seeds taken thus in substance being 10 to 30 grains. The seeds have also been employed infusion or decoction, but in these forms their bitterness is strong objection. As a general rule, however, the crude drugs wormseed is seldom administered, its active constituent santonin being employed. It acts as a direct poison to parasites, and is used as a remedy for roundworm, which is raoidely expels, it has also an effect on thread-worms to a lesser degree, but has no action on tap-worms. It is usually administered as a powder or in lozenges, not in solution, and is often given with calomel or compound powder of scammony. (06) **Traditional:** Parts used traditional uses contempory use Fragrance, Fragane parts Fragancy intensity, Fragrance category. Dye parts dye colour. (07) **Essential oil:** Extermely preliminary indications hint that wormwood essential oil (like many other essential) might have anti- fungal, anti-bacterial and anti- parasitic actions. However, that it does not mean that wormwood oil is an anti-biotic. Anti-biotics are substances that can be taken internally to kill micro-



organisms throughout the body. Wormwood oil, rather, has shown potential anti-septic properties. Unfortunately, it is also potentially quite toxic. Other weak evidence hints that an alcohol extract of wormwood might have liver-protective actions. The essential oils of peppermint (*Mentha piperita*) and Lavender (*Lavandula angustifolia*) have the fastest killing effect, acting within twenty and fifty minutes, respectively. Caution should always be taken when using essential oil to treat parasitic infections. Many of them are tonic, especially to children. Those with heart, liver, kidney, stomach or intestinal disease should also use caution, as well as in pregnancy. It appears safer than other *A. arborescens* oil, because the thujone content is negligible. They would tend to be in the moderately toxic category. Thujone, which can be quite toxic, occurs in two forms, i.e.  $\alpha$  and  $\beta$  form. The particular oil has negligible amounts of either. This oil is used as an emetic in the treatment of ascariasis. (08)

**Traditional:** (i) The true sages decrease secretion in the body and can effectively be used for decreasing mucous production, lactation, sweating and menstruation. The wormwood species, however, stimulate some secretions in the body and increase sweating and menstruation. A rounded tea-spoon of the dried plant in a cup of hot water that has steeped for fifteen minutes is useful in promoting sweating during feverish states or to increase scanty menstrual flow. It is also used as a smudging agent for sweet loaves or saunas, when the plant is placed on the hot stones; the vapour is inhaled to stimulate sweating. (ii) It is a good remedy for stomach indigestion or as its name suggests, to get rid of intestinal worms. It is suggested that two cups of tea per-day for a period of at least two weeks is a typical remedy for worms, but the use must be consistent during this time. (iii) Russians have reportedly used it as an abortifacient or for bladder stones, as well as for depression and neuroses. (iv) Wormwood is used by Hispanics to expel worms, as an anti-inflammatory and so treat arthritis, gout and late menstrual period. (v) In Central America, it is used to treat rheumatism and neuralgia and for heating and toning the liver. (vi) Modern time, it is used to treat dysmenorrhea, colic, diarrhea, constipation and cramps. (vii) The leaves are used for food or powdered to make a moth repellent in gardens. The plants can grow near fruit trees and vegetable gardens to deter harmful pests. (viii) Southern-wood is strongly aromatic and cultivated for the perfume industry and used medicinally only to a lesser extent. (ix) Infusions are used to treat sluggish digestion, poor appetite and gastritis. These are also used to treat jaundice, fever, hepatitis, asthma, cough, kidney stone, complaints, intestinal parasite, sprains and bruises, arthritis and hemorrhoids. (x) Washes from infusions to be used externally for such parasitic infections as scabies, compresses from infusion to soothe bruises and bites. In addition, it can be used full-strength as a household

disinfectant, while weaker solution can be used on household plants for an effective insecticide. (xi) Homeopathic tincture is used to treat menstrual irregularities or prolonged bleeding, as a liver stimulant or for sluggish digestion and in child birth, used for prolonged labour and retained placenta. (xii) Although, the root is rarely used for medicine, it is extremely powerful, especially for, hot, sore infections of the throat and lungs. It numbs the associated pain and is exceptionally cooling to the lungs and throat. It is also highly anti-bacterial and a good topical treatment. (xiii) Native American tribes used the wormwoods extensively for medicinal purposes, for treating all manner of illnesses and for cleansing the body in purification rites. The Lakotas used the wild sages extensively and had names for seven different species as well as two names for the white sage. The Lakota men used the white sage and the women used the dwarf sagebrush for protection against evil influence. (xiv) Mugwort (*Artemisia* is Latin term) is less aromatic and attractive but still considered 'Magical' in Europe, Asia and China and was considered the 'Mother of herbs'. It was listed by the Anglo-saxons as one of the 'nine sacred herbs' given to the world by the god Woden. It was planted along the road sides by the Romans, who would put springs in their sandals to prevent aching feet on long journey. (xv) Big sagebrush was widely used by numerous tribes in the west to treat colds and such gastro-intestinal complaints as diarrhea. It also had other uses, including as seasoning and a fiber to make the soles, linings for shoes and the weaving of bawls into clothing, in addition to using it for medicinal purpose. (xvi) Since it tastes like licorice, it was once used to flavor liqueurs, such as vermouth, as well as for bitter digestive remedies. (xvii) In addictive Thujone is what gave the drink absinthe its notorious reputation. The great painter Vincent van Gogh was reportedly to have been a habitual user of absinthe, which contains thujone, a volatile oil noted for its narcotic effect responsible for hallucinations, psychosis, and brain damage a syndrome labeled 'absinthism'. It is thought that heavy yellow in his painting may have been as a result from thujone caused rain damage. (xviii) In Mexican neighbourhood, species of *Artemisia* are called by names dependent on the area of origin. Throughout Mexico, there are a number of plants referred to as, 'Artemisia' or 'estafiate' and used interchangeably, both names are medicinally. It is also so much Mexico by the Spanish but considered to be a weed. (xix) According to Aztec religious-medical practice, mugwort belonged to the realm of the god of water and rain (Tlaloc) and was used to remedy illnesses that were considered to be caused by the gods of this realm, that is, illnesses that caused too much water to accumulate in the body. Therefore, they were both caused and cured by the same god. (xx) The Aztec Herbal of 1552 listed several remedies using the herb, including one of those who had been struck by lightning.

In addition, during celebrations honouring the water god, children were found by the herb to protect them from intestinal parasites. To-day, infusions of the herb is still to treat intestinal worms. (xxi) Extensive Chinese studies of Qing hao revealed that it was antibiotic effects against many fungal skin conditions and leptospirosis (wejl's disease). It was also effective against the malaria parasites plasmodium. An isolated compound called artemisinin, extracted from leaves, has also shown to be 90 % effective as and anti-malaria as the standard drug, chloroquine has been particelasy helpful in treating drug-resistant strains of malaria. Qing hao was first mentioned in the Chinese text of 168 BCE. Water infusions of the laf have produced on 89 % inhibition malatia in a 1:35 ratio. (xxii) Artemisinin, compound found in wormwood, has been processed into a specific drug called artemether, an effective treatment that rankes equally will quinine in treating both resistant and non-resistant strains of malaria. (xxiii) Chinese still use of leaf of wormwood rolled up into the nostrial to stop nosebleeds. (xxiv) Wormwood tea : 8 ounces wormwood leaves , 4 pints of water, 1 teaspoon castile soap, effective against : Aphids, caterpillars, fleabectles and moths. (02) putting dried springs of wormwood in the ground along side carrots and onions will mask their scent, confusing insects in particular the carrot rust fly.(03) The dried wormwood will not have the growth inhibiting effects of the fresh herb.(04) similar wormwood leaves in the water for 30 minutes, stir, strain, and leave to cool, added castile soap in wormwood mixture and use to spray. (xxv) If colic-Aconite, Cina, Belladonna and Lachesis,intestinal parasites include : hookworms from soil or sand is moderate climates, may affect aromes and upto billon people wworld-wide, an estimated 50 % of Americans and 25 % of the population, killing 60,000. Larva base into base feet or enter the mouth from food contaminated by unclean hands. The larva reach the blood stream pass to the heart, and will drop into the lungs before dropping into the stomacn. They can pass through mother`s milk to infect and infant. (05) Herbal medicine : Medicinal properties anthelmintic bitter digestive tonic, Digestive stimulant. Medicinal plants flowers has medicinal uses : yes- do not self administer, Do not use in pregnancy/ lactation. Legallyrestracted. No toxicity precautions Medicinal Notes. *A. cina* has numerous traditional medicinal uses. Some of its may uses are as an anthelmintic, as a bitter i.e. herb contains the bitter glycoside absinthin and bitter principal an absinthin, as a digestive tonic and as digestive stimulant. More uses are : anti-biotic, anti-septic, anti- rheumatic, anti- malaria, malaria of pregnancy ladies, auto-spasmodic, anti-inflammatory, analgesic, bitter digestive tonic, bile stimulant, carminative , lant, staphylococcus. Naegleriafloweri, pseudomonas aeruginosa, candida albicans, klebsiella pneumonia, intestinal worms and amebigorganism. Do

not use for children under 12 years unless prescribed *professionally*. (06)Homeopathy: Hahnemann`s observation: However important properties of cina may be, it has for ages been used exclusively for children, to expeal worms, it doses of 0.648, 1.296, 1.944 and 3.883 gms. He passes over in silences the frequent fatal effects of such doses; nor do he urges that some kids of worms,in children otherwise healthy, are not to be considered very serious, and that frequently their presence does not lead to any great in convenience, while psora remains latent. But it is certain that when these creatures exist in the great numbers, they indicate a morbid state of body and of developed psoraj without the cause of which, they will not fail to reappear, in spite of cina; so that their expulsion avails nothing, and a treatment so ill-directed often results in the death of the child, after having been long tormented. Cina is healing virtue most precious in other circumstances, as we may be convinced its symptoms in persous in health. Experience will prove, for instance, that powerful effect in whooping - cough and in certain intermittent fevers, accompanied with vomiting and carine hung. Omit other cases in which it is equally advantageous and which the homeopathic physian will readily discover.

#### EFFECT ON PSYCHIC ABILITIES [76, 115]

With in *wicca*, both wormwood and mugwort are believed to have effects an pychic abilities. Because of the power believed to be inherent in certain herbs of the genus *Artemisia*, many believers cultivate the plants in a ` moon garden`. The beliefs sunounding this geneus are founded upon the strong association between the herbs of the genus *Artemisia* and moon goddess *Artemisia*, who is believed to hold there powers. It is also said that genus *Artemisia* ( which includes over 400 plants).

#### SIDE EFFECTS [149-152]

(01) If people were to have side effects before and after taking *A. cina* for long terms ( $> 1$  years), what are they-none. (02) *A.cina* side effects by gender i.e. women and men -n/a. (03) *A.cina* side effects by age (0 to 60 years) -n/a, (04) some reports may have incomplete informations. (05) Allergies: (A) Avoid in individuals with a known allergy or hypersensitivity of mugwort, of its constituents, the mums, charnomile, marigold and daisies. Allergic responses have been associated with exposes to mugwort including bronchoconstriction/ Asthma, upper and lower respiratory tract sensitication, seasonal allergic rhinitis, conjunctivitis, pollinosis, contact dermatitis, urtiaria and atopiceczema. (B) Cross-reactivity has been noted between birch, cabbage, grass hazelnut, olive pollen, honey, mustard, royal jelly sage, sweet bell pepper pollen and sunflower. Cross-

reactivity has also been demonstrated between mugwort and kiwi, peach, mango, apple, celery and carrots. A florist with pre-existing sunflower allergy developed a life-threatening glottal edema after occupational contact with mugwort.

### SUBSTITUENTS [153-155]

Artemisia is substituted by a tall aromatic shrub, known as *Artemisia vulgaris* Linn. (compositae) found all mountaneous districts of India. It is found a Mount Abu in Rajasthan, in U.P., tamil Nadu and Jammu and Kashmir in Himalayas, to an altitude of 1000 meters. It occurs in Skkim and Sri- Lanka too. **Geographical source** – *A. vulgaris* Linn. Is found growing wild in the kurran valley in Pakistan, Turkey and from Kashmir to Kumaon in Himalays, as well as west Tibet, upto and altitude of 4000 meters. It is also found in Punjab, Uttar Pradesh and Haryana. **Microscopic characters:** Colour – flowers are yellow in colour, while other parts are whitish-grey. Odour – aromatic and sweet. Taste- bitter and camphoraceous. The drug consists of yellow or brownish flower-heads which are oval in shape. Flowers are fertile with tubular corolla and short cylindrical tube and narrow limb. Calyx is absent.

### CLINICAL OBSERVATION [111]

Noack and Trinks : *Cina* may be administered in the following affections-convulsions, Epilepsy ( from worms, Eclampsia, worm symptoms of children, with febrile symptoms, etc.). Quotidian and Tertian fevers, recurring after large doses of Quinine: (i) Chilliness, without thirst, followed by heat, with thirst after the heat, sweet. (ii) Chillness, much thirst. (iii) Fever, where the thirst is present only during cold stages, and where the patient vomits once or twice. *Cina* has also cured intermittent fevers, where vomiting without diarrhea, or diarrhea without vomiting is present, the remedy being indicated by the dialation of the pupils and clean tongue. Chronic vomiting of children, who suffe from worms. Involuntary no cultural enuresis in children suffering

from atropy. Whooping-cough in the convulsive stage, particulary when a gurgling noise from the throat down into the abdomen is heard after the paroxysm . Dr. Gray notes that *cina* deserves attention in the bronchial catarrhs which remain after measles, especially such as have a kind of hectic fever with them.

### CONFIRMED BY MODERN RESEARCH [28, 99,127,140,156]

(1) The medical usage rating of *cina* is 3 *cina* is one of the safest and more reliable vermifuges, used especially on children. (2) Because of bitter flavor, it is usually mixed with liquorice or some other pleasantfy flavor herbs. (3) The ubexanded floral heads and seed contain the vermicide `santonin`. This is effective and rafrid treatment for round worms, its is also effective for thread worms, though it does not effect tapworms. (4) The plant is also used as a febrifuge and as an aid to the digestion. Caution: It is advised in the use of this plant since it is poisonous in large doses. (5) Plant should not be used by pregnant women. (6) Dry flowers are used to make a homeopathic remedy. (7) This is particulary useful to complaints of the nervous system and digestive tract. (8) Plant is used to rid children of worms.

### SAFTY/ PRECAUTIONS FROM OILS [157-162]

(1) The leaves can be used in small amount as the food flavouring only. (2) Fatalities in people, especially children, treated with wormseed oil have been reported. (3) The seed oil (or the roots) should never be used (internally or externally), even in small amounts, for any ailment, due to potential toxicity. Its use for any therapeutic purpose is now considered obsolete in modern medical practice. Do not empty tea in pregnancy, lactiation or in small children. (4) Do not employ in patients with ulcers, intestinal diseases, heart disease, liver complaints or in persons with impaired kidney functions as the possibility of intoxication is augmented. (5) Certain active compounds in the plant may be genotoxic.

**TAXONOMIC HIERARCHY [163-166]**

Nature	Nature
Mundus	Plinius
Naturalia Biota	Naturalia
Domain	Eukaryota- whittakar and Marigulis, eukaryotes- 1978
Kingdom	Plantae - Haeckel, 1866 – plants
Sub-kingdom	Viridiaeplantae - Cavalier- smith – 1981.
Phylum	Tracheophyta – sinnott, 1935 ex Cavalier-smith 1998 vascular Plants.
Sub-phylum	Euphyllophytina
Infra division	Radiaatopses
Class	Spermatopsida – Brongniart- 1843 Eudicots Core eudicots
Sub- class	Asteridae - Takhtajan – 1967
Super order	Canpanulanae – Takhtajan Ex Reveal – 1992
Order	Asteralies – Lindley – 1833
Family	Compositae-Giseke -1792. Nom.cons. nom alt., Asteraceae ( Aster) or daisy
Sub-family	Asterodeae
Tribe	Anthemideae
Sub-tribe	Artemisiinae
Genus	Artemisia L ( sangebrush)
Species	Artemisia santonia ( Santoroeca)
Specific epithet	<i>Cina</i> – O . Berg and C.F. Schmidt

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