Trout’s Notes
on
the Genus Desmodium
(Chemistry, Ethnomedicine, Pharmacology, Synonyms and Miscellany)

Compiled and edited by K. Trout
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“A Better Days Publication”
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Desmodium gangeticum

Desmodium species (D. incanum?) found growing on the slopes of Haleakala, Maui, Hawaii
The Genus Desmodium

(Chemistry, Ethnomedicine, Pharmacology, Synonyms & Miscellany)

Inoculate with Rhizobium CB-627.
Commercial cow-pea inoculant works well. [Ed. As also does Lespedeza inoculant.]

Likes alluvial, limestone or sandy soil.
Genus includes 170 tropical and subtropical species. CAIUS 1989: page 42

Genus includes 350-450 spp.
Name is from the Greek, “desmos”: “bond” or “chain” and “hode”: “like”; in reference to the resemblance of the jointed seed pods to links of a chain. Allen & Allen 1981

Many species are commonly called Beggar’s Lice, Beggarweed, Tick clover or Tick trefoil in reference to the seeds which are covered with tiny hooked hairs that enable them to tightly adhere to fabrics and animal skins (Velcro-like) and allows seed distribution by passing animals.

The genus is important in establishing erosion control, ground cover and wildlife protection in burned or other lands cleared of vegetation. Once other plants begin to predominate, Desmodiums usually disappear due to the increased shading.

Some such as D. gangeticum and D. heterocarpon are of value in controlling weeds and erosion in sandy areas.

As will be noticed below, many species of Desmodium are highly valued in folk medicine for a variety of uses.

A representative few include: febrifuges, treatments for abscesses, acne, catarrh, dysentery, eye diseases, infections and liver diseases.

While numerous of their many contained alkaloids are known to be pharmacologically active, only 4 are active as entheogens. Hallucinogenic activity has been proven only for DMT and 5-MeO-DMT and their N-oxides. These water soluble N-oxides are converted to their parent compounds when smoked [or they can be dissolved in acetic acid and reduced to their parents by adding an excess of zinc dust (stir for ~30 minutes then neutralize the acid with base and recover with a nonpolar solvent)]

Others possibly exist but have not yet seen evaluation in humans. Animal studies published in Ghosal 1972a strongly suggest that 5-Methoxy-N-methyltryptamine may also be active but this must be viewed as tentative indications since animal models frequently fail in both directions as predictors of hallucinogenic activity and any human bioassays are unknown. One or more of the 6-methoxylated β-carbolines MAY be active but beyond known and demonstrated anti-cholinesterase activity, this is not yet proven. [Ghosal 1972a reported them as possibly weakly entheogenic with a prolonged duration.]

Normacromerine, present in low concentrations in D. tiliaefolium is also suggested as a hallucinogen based entirely on animal studies. N-Methylation of active phenethylamines abolishes hallucinogenicity in every known instance. IT seems less than likely that normacromerine and macromerine are exceptions. It also has apparently seen no evaluation in humans. (None of the other
phenethylamines present are hallucinogenic.)

An odd side-note:

A rare (and fatal) human disease called ‘kuru’ is characterized by staggering and madness. [Primary symptoms: Ataxia and decreased coordination leading to dementia, paralysis, slurred speech and visual disturbances. While the incubation period may last up to 30 years, death generally occurs within a month of the appearance of symptoms. There is no known treatment.]

This is a disease, primarily limited to the Highlands of New Guinea, which is caused by a prion (an infectious protein capable of reverse transcription into RNA) and usually is transmitted by the ritual consumption (ritual cannibalism) of the raw brains of infected dead relatives. Due to modern attempts to suppress cannibalism, its incidence is on a steady decline.

Although no doubt entirely coincidental, we find the common name for *Desmodium intortum*, “Kuru Vine”, to be rather curious in light of the fact many identical phenethylamines, tryptamines, other indoles, and β-carbolines that exist in some species of *Desmodium* also occur in the important forage crop *Phalaris*: a genus which is occasionally implicated in the development of severe neurological disorders in ruminants characterized by “staggers” (Unlike *Desmodium*. So far, we unable able to find documentation of similar problems resulting from *Desmodium* spp.)

Many (but not most) species of *Desmodium* are highly valued as forage material

Including, but not limited to: *Desmodium barbatum, D. canum, D. discolor, D. intortum, D. latifolium* and *D. nicaraguense*. These are cultivated in some regions as such.

*Desmodium heterophyllum* also provides good forage but is said to produce a low yield of material.

C.C.J. Culvenor 1973 went so far as to claim “...there are no reports of adverse effects in grazing animals” but L.J. Webb 1948 mentioned “string halt” being reported in horses grazing on *D. brachypodum* and “Chillagoe disease” similarly thought to result from *D. umbellatum* (both in Australia). [Chemistry has not been reported for either.]

Alkaloids known to be potentially toxic to grazing animals have been reported from *Desmodium* species. However, phenethylamines such as N-Methylyramine, Hordenine and Candicine have thus far been observed at substantial levels only in the roots.

Others such as Gramine, Tryptophan derivatives and Indole Acetic Acid have been found in the leaves only in small concentrations.

Indole acetic acid and tryptophan derivatives may not be directly toxic to grazing animals but can be metabolized by the gut flora of some ruminants (cattle but not goats or sheep) to 3-Methylindole.

3-Methylindole was demonstrated by Carlson and coworkers to be the direct causative agent of Acute Bovine Pulmonary Emphysema. [Carlson et al. 1972]

While *Desmodium* species may serve as valuable fodder or forage, representing no threat to grazing animals, a blanket assumption of safety for the genus is unwarranted.
Desmodium adscendens (Sw.) DC

[= Hedysarum adscendens Swartz. = Hedysarum caespitosum Poiret. = Desmodium caespitosum (Poiret.) DC. = Desmodium strangulatum Thw.]

Used medicinally in West Tropical Africa

Caius 1989: page 42

Stem-leaf powder used in Ghana for medical treatment of asthma. (Daily dosage is 1 to 2 tablespoons of dry powder given in warm water)

Effective as prophylaxis against asthma attacks; ineffective as treatment for attacks.

Provides protection against acetylcholine- and histamine-aerosol-induced bronchospasms.

Extract inhibits anaphylactic contraction of guinea-pig ileum.

Extracts also reduce sensitivity of smooth muscles to histamine but in the presence of high levels of histamine only prolong the time required to reach maximum contraction.

Chemical evaluations not performed.

M.E. Addy & E.M.K. Awumey 1984

See also pharmacological evaluation by N’gouemo et al. 1996.

“Amor seco”, “Beggar-lice”, “Margarita”

Infusion for nervousness or in baths for vaginal infections.

Believed to re-attract a mate who’s affection has strayed. Considered to have magic powers.

Said to be used as contraceptive.

Also, leaf tea as external wash to cause lactation in dry mothers.

Duke 1994: page 64

“Beggarlice” (English)

“Pega-pega” (Panamanian Spanish)

Leaves used for consumption, convulsions, venereal sores & applied (with lime juice) to wounds.

Duke & Vasquez Martinez 1986

Africa: “Lo a guo”

Cameroon: “Tombolombo”

Ivory Coast: “Acoumengate”

Liberia: “Loa guo”

Sierra Leone: “Koli-niki” (“Leopard’s ground nut”), “Ndohi-nikili” (“Bush groundnut”) and “Te-yundo” (from the compounded words for “groundnut” and “ bush”).

Leaf is used for bronchial asthma, colic, constipation, convulsions, cough, ringworm, venereal sores and for dressing wounds.

Ayensu 1978: page 149.

Negative screening by Bouquet and by Bouquet & Debray.

Leaves used for antidote in poisonings, blennorrhea

[Ed.: i.e. an excessive discharge of mucus; also used as an obsolete term for gonorrhea], colds, constipation,

convulsions, cough, epilepsy, tinea [Ed.; in French, teigne may also be used to refer to skin diseases such as ringworm], venereal diseases, and vertigo.

Mott also includes an interesting ‘magical’ use:

When a person [has a business matter to attend to, is suffering from ‘troubles’ or ‘problems’], a heap of the leaves is made into a mixture with earth and spread on the body. After this, they are [to get up and go out (raise up?) into] the sun; making sure that they are not seen by anyone. After doing, this everything is said to go fine.

[My translation is a bit shaky, the original is below]

[“Si un Mozombo a une ‘AFF AIRE’, ils pile des feuilles qu’il mélange à de la terre. Il doit se frotter le corps avec cette préparation au lever du soleil, sans que personne le voie. Alors, tout se passera bien.”]

Elizabeth Motte 1980: page 376.

Occurs in Africa, America, India, Malaysia, Melanesia, Sri Lanka, & Thailand.

Sanjappa 1991: p. 149.

Desmodium axillare (Sw.) Kuntze

Used medicinally in West Tropical Africa

Known as “Amor seco”, “Pega pega”

Said to be used similarly to D. adscendens.

Duke 1994: page 64

Desmodium barbatum (L.) Benth.

“Wild senna” (British Honduras)

Von Reis Altschul 1973: entry # 1766.

Used medicinally in Madagascar.

Caius 1989: page 42

Desmodium brachypodum A.Gray.

“Tick trefoil”

Suspected (along with Glycine tabacina) of causing “string-halt” in horses, April 1940. Near Stanthorpe in Queensland, Australia. [Queensland Herbarium Records]

Webb 1948: p. 84.

Desmodium cajanifolium (HBK) Kuntze

Known as “Amor seco”

Used to treat shock

Duke 1994: page 64
Desmodium canum (J.F.GMEL.) SCHINZ & THELL.  
[= Desmodium supinum (Sw.) DC. and Desmodium frutescens (Jacq.) Schindl.]

“Kaimi clover”, “Creeping beggar-weed.”
Tolerates acid soil and warm, wet climates. Valued in Hawaii and Florida as forage.
Root extract was used in Cuban hospitals to treat wounds (during their wars of independence).

Desmodium caudatum (Thunb.) DC  

In roots (4:1 ratio/ major: minor):
N,N-Dimethyltryptamine (major alkaloid) (0.087% by dry weight) (recovered 388 mg of purified alkaloid from 3.39 grams crude alkaloid but would have recovered 446.5 mg. if they had used all of their picrate. If they had used all of their crude alkaloid fraction (11.1 gm) their recovery would have been 1.46 grams.)
Bufotenine-N-oxide (minor alkaloid- 0.03%)

In stem:
Bufotenine (major alkaloid) (0.04% by dry weight) (from 6.9 grams of crude residue from chromatographic fraction. If all picrate had been used: 4.3 gm from 10.75 kg of stems.)
N,N-Dimethyltryptamine (minor alkaloid- 0.0035%)
Bufotenine-N-oxide (minor alkaloid- 0.004%)
UENO et al. 1978
[Ed.: It must be noted that their step of partitioning the residue of a methanolic extract between Ethyl acetate and water would have most likely resulted in a partial loss of DMT into the Ethyl acetate. It must also be noted that leaves were not analyzed.]
Collected in May.

Western region of Japan = Chinese drug “Moh-Ts’ao”  
“Misonaoshi”: Japanese name for plant.
UENO et al. 1978

Pinyin: qìng jiǔ gāng

Uses: Plant: analgesic, antipyretic, antiseptic, detoxicant and insecticide. Whole plant is decocted for abdominal cramps in women, boils, carbuncles, dysentery, duodenal ulcers, fever, gastroenteritis, influenza, measles and mastitis. [cites N.I.H. 1974]  
DUKE & AYENSU 1985

Occurs in Bhutan, Burma, China, India (in Peninsula, Bihar, Gujarat, Rajathan, Uttar Pradesh and W. Bengal), Indonesia, Nigeria and Sudan.  
SANJAPPA 1991: page 152.
**Desmodium discolor** Vogt.

Brazilian shrub grown as forage.


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**Desmodium distortum** Macb.

Called “Engorda caballo” [“Horse fattener”] in Guatemala.

Von Reis Altschul 1973: #1767.

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**Desmodium dunni**

Used as beans in China.

Von Reis Altschul 1973: #1770.

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**Desmodium floribundum**

Hypaphorine in root and stem-leaf

Ghosal 1972a (citing Mehta 1973: p. 38)

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**Desmodium gangeticum** DC.


Observations noted during 1993 field trials.

Container grown had 1/4 the branches of field planted specimens.

Incredibly tough plants even as seedling. Very drought tolerant.

Handles extreme sun exposure although both the leaf and plant size stays smaller. Foliar feeding burns easily.

Shade to partial shade grown plants started flowering later but leaf size was much larger. Set seeds later but in much heavier groupings. Seed production started at several months of age on plants in full sun. With those in shade; it was several months later, if at all. Plants showing good nodulation had the largest and best growth but did not flower the first year.

Plants stunted in heavy clay.

Did well in potting soil.

Did well in sandy loam.

Highest losses occurred in rich soil.

Will repeat in 1994.

Flower colors observed, sometimes mixed on a given plant: white, pink, purple and pink and purple.


Thrives in good garden dirt. Plant 1 ft. to 18” apart.

Easy from seed. New plants start readily from dropped seeds. May not set seed in colder climates the first year.

Needs some winter protection to ensure survival in spring. Top surface of leaves often turns red in winter.

Tlc by J. Appleseed (unpublished research 1994-1996) detected no alkaloids until the end of the second year of growth at which point 5-MeO-DMT started to show up in small amounts. DMT began to become detectable during the third year; co-occurring with 5-MeO-DMT. (Roots and aerial portions assayed.) Plants grown from seed obtained via otj and JLH.

“All small shrub to 4” covered with grey downy hair. Very rare outside of India, where it finds use in herbal medicine. Its Sanskrit name *saumya* means “rich in soma juice’ and had led scholar David Flattery to postulate the Vedic soma potion was perhaps a Peganum/Desmodium ayahuasca analog, due to its concentrations of tryptamines.”

...otj 1995 catalog

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**Note on the Chemistry summary which follows:**

The published data is reported as encountered.

All discrepancies have been left intact.

Where it says ? gm, this indicates that Ghosal recovered an oil but did not note its weight.
Desmodium gangeticum DC.

### Aerial parts: From 1 kg.: (Fresh wet wt.)
- DMT
  - 0.41 gm (second)
  - 0.21 + 0.12 gm
- DMT-N-oxide
  - 0.21 + 0.12 gm
  - 0.57 gm
- 5-MeO-DMT
  - 0.07 gm

Thick colorless oil as chloroform soluble acetate

(Dry plant has higher proportions of 5-MeO-DMT:DMT than Air dried has 0.01-0.03% total alkaloids.
Fresh has over 3X the alkaloids than either dried or preserved
(A similar phenomenon also observed in dry and preserved plant material was more than three times the amount present in indicated that the alkaloid content of the aerial portions of green
and beginning the extraction process.)

Maximize alkaloid content by destroying enzymatic activity
the leaves with ethanol immediately upon harvest might

### Roots (Dried) Refs. (From 1.6 kg dry)

<table>
<thead>
<tr>
<th>Component</th>
<th>Refs.</th>
<th>From 1.6 kg dry</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenethylamine</td>
<td>1, 3, 4</td>
<td>0.28 gm. (impure)</td>
<td>1</td>
</tr>
<tr>
<td>A-β-Hydroxy-phenethylamine</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>N,N-Dimethyl-β-keto-phenethylamine (New compound)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N-Methyl-tyramine</td>
<td>1, 3, 4</td>
<td>0.5 gm.</td>
<td>1</td>
</tr>
<tr>
<td>(Major base)</td>
<td>1, 3, 4</td>
<td>0.82 gm.</td>
<td>1</td>
</tr>
<tr>
<td>Candicine</td>
<td>1, 2, 3, 4</td>
<td>0.18 gm.</td>
<td>1</td>
</tr>
<tr>
<td>Unidentified phenethylamine</td>
<td>1, 4</td>
<td>0.38 gm.</td>
<td>1 [0.02%]</td>
</tr>
<tr>
<td>DMT</td>
<td>1, 3, 4</td>
<td>0.12 gm. (impure)</td>
<td>1</td>
</tr>
<tr>
<td>[0.02%]</td>
<td>0.07 gm from ca. 2 kg</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Choline</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypaphorine</td>
<td>1, 2, 3, 4</td>
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(Also reported in GHOSAL & MUKHERJEE 1966 for isolation and characterization and JOHNS et al. 1966b and GHOSAL & BANERJEE 1968 [Also reported in GHOSAL et al. 1972e])

Fresh has over 3X the alkaloids than either dried or preserved material.
Air dried has 0.01-0.03% total alkaloids.
Dry plant has higher proportions of 5-MeO-DMT:DMT than fresh material.

BANERJEE & GHOSAL 1969

(A similar phenomenon also observed in Phalaris tuberosa.
If the data can be extrapolated, it might imply that macerating the leaves with ethanol immediately upon harvest might maximize alkaloid content by destroying enzymatic activity and beginning the extraction process.)

“Assays with fresh green or air dried and preserved plants indicated that the alkaloid content of the aerial portions of green plant material was more than three times the amount present in dry and preserved samples.”

The roots of D. gangeticum showed no such phenomenon.
GHOSAL & BHATTACHARYA 1972

Seed components of seed make the observation that
If one has any familiarity with neurochemistry, the above components of seed make the observation that D. gangeticum is “Known as saumya or amsimat “rich in soma juice” quite fascinating.

Green Plant (Stem and Leaf):
- (2 kg. yielded 1.3 gm. of bases)
- N,N-Dimethyltryptamine
- N,N-Dimethyltryptamine-N-oxide
- A-β-carboline
- Unidentified indole bases
GHOSAL & BHATTACHARYA 1972

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1. GHOSAL & BANERJEE 1969
2. GHOSAL et al. 1970b
4. GHOSAL et al. 1972e

3 Above obtained yield of 0.4 gm total alkaloid from 1.6 kg. dried and milled roots. Compare with 1 above. Seasonal or local variability? Or other?....
Desmodium gangeticum DC.

DMT in root, stem-leaf and fruit
DMT-N-oxide in root, stem-leaf and fruit
Hypaphorine in root
5-MeO-DMT in stem-leaf
5-MeO-DMT-N-oxide in stem-leaf
6-Methoxy-N-methyl-β-carbolinium cation in stem-leaf
N catégorie-Methyl-H4-harman in stem-leaf
GHOSAL 1972a

Desmodium gangeticum
DMT and 5-MeO-DMT in whole plant, root, stem and leaf

Desmodium gangeticum

GHOSAL & BANERJEE 1969
and GHOSAL & BHATTACHARYA 1972
also

“Hordenine, or peyocactin, is a stimulant found in whole
Desmodium gangeticum at a level of 0.05% [Footnote1] and in
Dutaillyea oreophila leaves at 0.013% [BAUDOUIN et al. 1981]
OTT 1994
[Ed. Hordenine is also known as Anhaline.]

A lactone (C_{16}H_{30}O_{2}) was recovered from the roots.

Commercially, D. gangeticum is sold as cut pieces of root
mixed with short stems.

Commercial material may actually be other Desmodium
species and sometimes species of Flemingia.
AHUJA 1965: pp. 32-33.

Used in Indian medicine:
Root extracts: asthma, diarrhea, dysentery and chronic fever.
Aerial portion extract: Aphrodisiac, for biliousness, eye
diseases and as uterine stimulant.
GHOSAL & BHATTACHARYA (1972)

Aerial portions used as an antidote for snake bite and scorpion
stings.
GHOSAL et al. 1972e

“Desmodium gangeticum DC. (Syn. Hedysarum gangeticum
Linn.)
Ben. - Salpani
Hind. - Shalaparni
Kan. - Sarivan
Mar., Kon and Salvan
Tam. - Pallada
Tel. - Gitanaram
Habitat: Grows wild in lower Himalayan regions and through-
out the plains of India.
Parts used: Whole plant, root and bark.

Ayurvedic description

Sanskrit: Shalaaparna, Shalaaparni
Synonyms: Aakuparnikaa, Amshumati, Atiguh,
Atiruha, Deerghamoolika, Dhruna, Guha,
Mahaakleetaanika, Parninee, Peethanee, Saumya, Shhira,
Triparni, Vidaarigandha
Properties:

Guna - Guru, Snigdha?
V eerya - Ushna
Vipaaka - Madhura

Actions, Uses:
Angamardaprashamana, Ateesaaraghna,
Brihmana, Chardighna, Garavishahara, Hridya, Krimighna,
Kshataghna, Meghahna, Mootrala, Hasaayaana, Shoshahara,
Shothahara, Shwasaahara, Snehana, Stambhana, Trishaghna,
Vishamajwaraghna, Shvabhya.

"Medicinal properties and uses: It is a bitter tonic, febrifuge,
digestive, anticitarrhal, alternative and tonic (Nadkarni, 1954).
The root of D. gangeticum is one of the ingredients of a famous
Ayurvedic preparation Bashamoolakwatha, which is
considered to be antipyretic, alternative and a bitter tonic. It is
reported to be beneficial in the treatment of typhoid, bilious-
ness and also as a diuretic and aphrodisiac."

“Pharmacology: The aqueous extract of the root of D.
gangeticum exhibited anti-inflammatory, antibacterial and anti-
fungal activities. The drug showed inhibitory effect on the
isolated frog’s heart. It had a relaxant effect on the smooth
muscles of intestines of rabbit and dog and on the isolated rat
uterus. The drug had mild diuretic effect and it inhibited
respiration in moderate doses. It was found to be non-toxic in
acute toxicity studies. (PREMA, 1968)
The total alkaloid fraction of stem and leaves of D.
gangeticum and total alkaloids of roots of D. pulchellum
exhibited curariform activity on frog’s rectus muscles.
( BHATTACHARYA and SANYAL, 1969)."
INDIAN COUNCIL OF MEDICAL RESEARCH 1987: pp. 345-349,
citing:
BHATTACHARYA & SANYAL 1969
GHOSAL & BANERJEE 1968
PREMA 1968
See also PRASAD & ANSARI 1966-1967

Total alkaloid fraction of stem and leaf exhibited curariform
activity, non-toxic, relaxant to smooth muscles, mild diuretic
and respiratory inhibitor.
Roots had a nicotine type effect on intestine and carotid
blood pressure.
B. OLIVER-BEVER 1983
per cites BHATTACHARYA & SANYAL 1969 and ALL contained references
therein. and
PREMA 1968, and
GHOSAL & BHATTACHARYA 1972
See also GHOSAL et al. 1972e

“Desmodium gangeticum DC. is common on the lower hills
and plains throughout India; on the Himalayas it ascends to
5,000 feet. It is spread east to Pegu and Ceylon, the Malay
Peninsula and Archipelago, and is distributed to China, the

11
Trout’s Notes on the Genus Desmodium

Desmodium gangeticum DC.
Native to the Asian tropics and Australia.
Called Berghoontjes by speakers of Dutch.

VAN WIJK 1911

Bengali: Salpáni
Hindu: Sarivan
Sanskrit: Salaparni
Small shrub common in the lower Himalayan regions and on the plains of India.
Used for fever and cataracth.
Chief of the 10 ingredients in Dasamula kvatha.
DEY 1986: page 114

“Salpáni”
Undershrub distributed in the outer Himalayas, occurring up to 5000 feet, and “throughout India to Ceylon and Burma, Malay Penninsula and Islands, Chine, Phillipines and tropical Africa.” It is said to be very common in Sal forests.
Used medicinally in Dasamula.
Root is most commonly used although occasionally the whole plant is incorporated.
Astringent, diuretic and tonic.
Root decoction is used in folk medicine for fever. Also combined with other drugs for affections of chest and brain and for fevers.

Occurs in the preparations:
“Chyavanprash”, “Dashmul Tail” and “Salpáni-adi-kwath”

Drug collection is during the rainy season (flowering time).

AHUJA 1965: pp. 32-33.

Common names: “Chippi”, “Latkanni”
Sanskrit: “Salaparni”
Root of plant growing on an ant-hill is made into a paste with water and given in cases of diarrhea. (5-10 gram dosages)
CCCRAS 1990: pages 63 and 107.

Woody plant occurring in Old World Tropics.
Used for cataracth and fever (India).
Also used as a green manure.
UPHOF 1968: p. 177.

Leaf and stem alkaloids at 8-10 mg./kg. (oral and parenteral administration) produced effects in albino rats and mice which have been used in animal models to indicate hallucinogenic activity.

Observed symptoms from the total leaf and stem alkaloids include: Excitation and or jumping movements, hyperactivity, tremors, paralysis of hindlimbs, tapping with forelimbs, convulsions and respiratory arrest.
The alkaloids derived from the seeds produced similar behavioral changes but there was no significant changes in behavior when given the total root alkaloids.

GHOSAL & BHATTACHARYA 1972

Occurs in tropical Africa, Australia, Bhutan, Burma, China, India (all; in Himalayas up to 1400 meters), Malesia, Nepal, Pakistan, Ryukyu, Sri Lanka, Taiwan, Thailand and Vietnam.
Desmodium guianense DC

Used medicinally in Guiana.
CAIUS 1989: page 42

Desmodium gyrans DC

[= Desmodium motorius (HOUPT.) MERR. = Desmodium roylei WIGHT & AIRN. = Codarioicalyx gyrans (L.F.) HASSEK. = Codarioicalyx motorius (HOUTT.) OISHI = Hedysarum motorium HOUTT. = Hedysarum gyrans L.F. = Meibomia gyrans (L.F.) O.KUNTZE.]

In stem/leaves:
DMT-N-oxide 2
5-MeO-DMT 1, 2
Leptocladine 1, 2

1. GHOSAL 1972a
2. GHOSAL et al. 1970b

Leaves (from 2 kg.) (Total alkaloids 0.036%)
β-Phenethylamine (0.11 gm.)
N,N-Dimethyltryptamine (82 mg.)
DMT-N-oxide (0.18 gm.)
Bufotenine (68 mg.)
5-Methoxy-N,N-dimethyltryptamine (35 mg.)
5-MeO-DMT-N-oxide (trace)
Uncharacterized indole-3-alkylamines (27 mg.)
Uncharacterized β-carboline (26 mg.)

GHOSAL et al. 1972a

Roots (from 0.5 kg.) (Total alkaloids 0.33%): Hypaphorine (1.2 gm.)
Choline (0.4 gm.)
Minor alkaloids (52 mg.) i.e. DMT, DMT-N-oxide and two uncharacterized indole-3-alkylamines.

Traces of unidentified β-phenethylamines
GHOSAL et al. 1972a

Roots:
5-Methoxy-N,N-dimethyltryptamine
Hypaphorine

GHOSAL 1972a

Desmodium gyrans seemed to prefer being on the dry side.

Only those in clay soil thrived in sun. Those in shade and partial shade did not get as big but did well in sandy loam or potting soil. None flowered the first year. Responded well to foliar feeding with fish. Urea seemed to check marked tendency towards going chlorotic.

Plants did not survive 1993-1994 winter in Taylor, Texas (17° F low). Around half a dozen seedlings came up in past year’s flats during April 1994. They did not survive past the seedling stage (thought due to local acid rain – measured ~ pH 4).

K.TROUT 1993 field trial observations

Leaves have aphrodisiac, diuretic, febrifugal and tonic properties.

Roots used (in Indian medicine) as a remedy for asthma and coughs, as an antisympotemic, an emollient and a laxative.

The Desmodium Species

Desmodium gyroides DC.

[= Codarioicalyx gyroides (ROXB.) HASSEK. = Hedysarum gyroides ROXB. = Meibomia gyroides (ROXB. ex LINK) O.KUNTZE.]

Whole plant is combined with 4 leaves of Ocimum sanctum, made into a paste and put inside of a banana. This is “given to a lady for conception.”

TARAFDER 1983

Also noted by Jain to be used medicinally to promote conception. JAIN 1991: p. 72.

Shrub-like plant occurring in Asian tropics.

Used as a green manure.

UPHOF 1968: p. 177.

Occurs in the tropical Himalayas from Garhwal to Arunachal Pradesh, Assam, Bihar, Meghalaya, Nagaland and West Bengal. Besides India, it is also found in Bhutan, Burma, China, Malesia, Nepal, Sri Lanka, Thailand and Vietnam.

SANJAPPA 1991: page 152.
Desmodium heterocarpon (L.) DC
 [= Desmodium polycarpon (Poir.) DC. = Desmodium trichocaulon DC. = Hedysarum heterocarpon L.]
[As Desmodium polycarpon DC.]
Throughout India, Ceylon and Malaya. Occurs as far as China, Japan, the Philippines, Polynesia and East Africa.
Used by Santals for fainting and convulsions.
Malay: “Kachang kaya betina”, “Kalumber”, “Katumber”, “Rumpat kerbau d’rapah”
Mundari: “Piribit”
Santali: “Baephof”
Telugu: “Chepputatta”
Uriya: “Krishnupani”, “Salpani”
Fr. Jean Ferdinand Carius 1989

“Sarivan”
Root is used for fevers.
Unspecified parts reported being used for cough, fainting and as a tonic.

Occurs throughout India (up to 2350 meters), also Australia, Bangladesh, Bhutan, Burma, China, Japan, Malaysia, Pacific Islands, Ryukyu, Sri Lanka, Taiwan, Thailand and Vietnam.

Desmodium heterophyllum (Willd.) DC
[Desmodium triforum (L.) DC. var. majus Wight & Arn. = Hedysarum heterophyllum Willd. = Hedysarum reptans Roxb. = Meibomia heterophylla (Willd.) O. Kuntze.]
Malay: “Akar sisik naga”, “Akar telinga tikus”, “Omba-ombu”
Mauritius: “Trefle lievre”
Found in tropical regions of the eastern Himalaya, Khasia, Assom and, following Gulf, to Penang and Malacca. Fairly common presence in plains of the Peninsula and also Ceylon. Occurs to the Malay Archipelago, the Philippines, China and the Mascarene Isles.
Used medicinally in Mauritius as a diuretic, for dysentery and as a cooling medicine.
Carius 1989: pages 42 and 43.

[as Desmodium heterophyllum Vogt]
Trailing shrub occurring in South-East Asia to the Philippine Islands.
Recommended as fodder for cattle.
Uphof 1968: p. 177.

Occurs in Andaman, the Peninsula of India, East India and the Nicobar Islands, also in Australia, Bangladesh, Bonin, Burma, China, Malesia, Nepal, Pacific Islands, Ryukyu, Taiwan, Thailand and Vietnam.

Desmodium intortum URB.
[= Desmodium hjalmarsnii Stand. = Desmodium trigonum (Sw.) DC. = Hedysarum intortum Mill. = Meibomia intorta (Mill.) Blake.]
“Kuru Vine”, “Greenleaf”, “Beggarlice”
Cuna Indians regard as a love potion.
[Said to be frequently confused with Desmodium aparines (Link) DC]
Page 59 of Mills says little more (obtained via ILLS) Still need to see page 60-?
Highly regarded as fodder and graze for cattle.

Desmodium lasiocarpum DC
[= Desmodium latifolium DC.]
“Suspected” Ott 1993: p. 246
“Desmodium lasiocarpum DC is found throughout the tropics of the Old World. It occurs in the Himalayas, ascending to 4000 feet in Sikkim, and spreads to Burma and Ceylon. It is distributed [in] the Malay Archipelago, the Philippine Islands, Madagascar, and tropical Africa.
In Gold Coast native doctors mix the roots with small hot peppers and use them in an enema to cure blood in the urine.
Used medicinally in West Tropical Africa.
Ashanti: Kohemi koko
Benin: Yalelegbe
Burma: Kinbun
Ewe: Ledalede
Fulani: Takabeh, Takamahi
Hausa: ‘Danke ’dafi, Ka ‘danka ‘dafi, Ma ’da ’ddafi
Rano: Dangere
Menole: Nane, Nanci
Santali: Simmathasura
Tamil: Anguchabadi, Chinanduri, Chimbadai, Chimbattai, Chirubulladi, Chivamadu, Kidameri, Kabayam, Kachattinbadi
Telugu: Adivyanti, Gaba, Magalinga, Tellanelapariki
Timne: Aghintmarabana, Egbuntemoer
Twi: Otokataka
Uriya: Ronodato
Yoruba: Abashoka, Aberodefe, Berodefe, Emimo, Ewe emo, Ewe omo”
Fr. Jean Ferdinand Carius 1989
Herbaceous plant from tropics of Africa and Asia.
In Nigeria it is used as a food for horses.
Uphof 1968: p. 177.
**Desmodium laxiflorum** DC


Powdered roots given to cure unconsciousness.
JAmmu-Tawi 1982: page 545

**Desmodium laxiflorum** DC.

(Used by Bhils in Mount Abu area (border of Rajasthan and Gujarat states, western India)
Root is used in chronic fevers and vomiting.
SEBASTIAN & BHANDARI 1984

Boiled roots drunk for puerperium in the Philippine Islands.
VON Reis Altschul 1973: #1776.

“Kadakatur”
Roots are used to treat fever, applied to small-pox, also given for unconsciousness or vomiting.

Occurs in most of India including Andaman, and the Nicobar Islands, also in Bangladesh, Bhutan, Burma, China. Indonesia, Malaysia, Nepal, Pakistan, Philippines, Taiwan, Thailand and Vietnam.
SANJAPPA 1991: page 156.

**Desmodium microphyllum** (THUNB.) DC.

“Chattomara”
Root is used as medicinal abortificient.

In all of India up to 2400 meters. Also found in Bhutan, Burma, China, Japan, Malesia, Nepal, Pakistan, and Sri Lanka.
SANJAPPA 1991: page 157. According to SANJAPPA this is the same species as *D. parvifolium* DC.

**Desmodium nemorosum** F. MUELL.

Reputed poisonous to stock by F.M. BAILEY 1909: p. 140.
WEBB 1948: p. 84.

**Desmodium nicaraguense** OERST.

**Desmodium nicaraguensis** Oerst. ex Bentham, according to ALLEN & ALLEN 1981

“Desmodium nicaraguense. This shrub, a native of Central America’s Pacific slope from Mexico to Nicaragua, is so nourishing to livestock that in Guatemala and El Salvador it is known as “engorda caballo” (horse fattener) or “engorda cabras” (goat fattener). Its leaves and young branches are eaten by livestock of all kinds and are locally considered excellent forage. The plant grows wild and in abundance, both in wet or dry thickets and on rocky hill.sides. It grows to 6m tall, but livestock usually keep it cropped back. Although the shrubs recovers quickly after grazing, it is killed outright if cropped too close. The foliage contains about 22 percent crude protein and can be harvested for hay or silage (up to 7 cuttings a year have been achieved in Costa Rica). The crop is easily established by direct sowing, seedling transplants, or cuttings, and the plants can sustain heavy competition from grasses and other vigorous plants.”

**Desmodium nigaraguense** (U.S.A.) + Alkaloid screening SMOLENSKI et al. 1972

**Desmodium nigaraguense**
Called “*Engorda-caballo*” (“Horse fattener”) in Honduras. Planted for forage.
VON Reis Altschul 1973: #1768.

**Desmodium oldhami** OLIV.

Leaves used for tea in Japan.
ALLEN & ALLEN 1981: page 229

Perennial herbaceous plant from Japan. Use for tea also mentioned by Uphof 1968: p. 177.

**Desmodium paniculatum** (L.) DC.


“Panicled tickclover.”
Flowering from July to September.

“Suspected” OTT 1993: page 246

15
And finally (all by dry weight unless specified otherwise):

### Young seedling stem & leaf

<table>
<thead>
<tr>
<th>Compound</th>
<th>% of total</th>
<th>Actual %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gramine</td>
<td>2%</td>
<td>-0.002%</td>
</tr>
<tr>
<td>N,N-DMT</td>
<td>62%</td>
<td>-0.074%</td>
</tr>
<tr>
<td>N,N-DMT-N-oxide</td>
<td>19%</td>
<td>-0.023%</td>
</tr>
<tr>
<td>Bufotenine</td>
<td>9%</td>
<td>-0.011%</td>
</tr>
<tr>
<td>5-Methoxy-N-methyltryptamine</td>
<td>8%</td>
<td>-0.010%</td>
</tr>
<tr>
<td>5-Methoxy-DMT</td>
<td>Detected</td>
<td>Trace</td>
</tr>
</tbody>
</table>

### Root of young seedling

<table>
<thead>
<tr>
<th>Compound</th>
<th>% of total</th>
<th>Actual %</th>
</tr>
</thead>
<tbody>
<tr>
<td>N,N-Dimethyl-tryptamine</td>
<td>27%</td>
<td>-0.27%</td>
</tr>
<tr>
<td>DMT-N-oxide</td>
<td>7%</td>
<td>-0.011%</td>
</tr>
<tr>
<td>DMT-N-methyl cation</td>
<td>11%</td>
<td>-0.041%</td>
</tr>
<tr>
<td>5-Hydroxy-N-methyltryptamine</td>
<td>6%</td>
<td>-0.022%</td>
</tr>
<tr>
<td>5-Methoxy-N-methyltryptamine</td>
<td>Detected</td>
<td>Trace</td>
</tr>
<tr>
<td>6-Methoxy-N-methyl-β-carbolinium cation</td>
<td>Detected</td>
<td>Trace</td>
</tr>
<tr>
<td>6-Methoxy-tetrahydro-harman</td>
<td>7%</td>
<td>-0.026%</td>
</tr>
<tr>
<td>Unidentified base</td>
<td>Detected</td>
<td>Trace</td>
</tr>
</tbody>
</table>

According to the above; Whole plant of young seedlings will yield 3.4 gm. of DMT per kg.

### Mature stem and leaf

<table>
<thead>
<tr>
<th>Compound</th>
<th>% of total</th>
<th>Actual %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gramine</td>
<td>7%</td>
<td>0.098%</td>
</tr>
<tr>
<td>N,N-DMT</td>
<td>21%</td>
<td>0.294%</td>
</tr>
<tr>
<td>5-Hydroxy-N-methyltryptamine</td>
<td>4%</td>
<td>0.056%</td>
</tr>
<tr>
<td>Bufotenine</td>
<td>8%</td>
<td>0.112%</td>
</tr>
<tr>
<td>5-Methoxy-N-methyltryptamine</td>
<td>Detected</td>
<td>Trace</td>
</tr>
<tr>
<td>5-Methoxy-DMT</td>
<td>34%</td>
<td>0.476%</td>
</tr>
<tr>
<td>6-Methoxy-N-methyl-β-carbolinium cation</td>
<td>Detected</td>
<td>Trace</td>
</tr>
<tr>
<td>6-Methoxy-tetrahydro-harman</td>
<td>5%</td>
<td>0.070%</td>
</tr>
<tr>
<td>Unidentified bases</td>
<td>3%</td>
<td>0.028%</td>
</tr>
</tbody>
</table>

### Mature plant seeds

<table>
<thead>
<tr>
<th>Compound</th>
<th>% of total</th>
<th>Actual %</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMT</td>
<td>4%</td>
<td>-0.001%</td>
</tr>
<tr>
<td>5-Methoxy-N-methyltryptamine</td>
<td>8%</td>
<td>-0.002%</td>
</tr>
<tr>
<td>5-Methoxy-DMT</td>
<td>10%</td>
<td>0.002%</td>
</tr>
<tr>
<td>DMT-N-oxide</td>
<td>Detected</td>
<td>Trace</td>
</tr>
<tr>
<td>2-Methyl-β-carbolinium cation</td>
<td>13%</td>
<td>-0.003%</td>
</tr>
<tr>
<td>6-Methoxy-tetrahydro-harman</td>
<td>26%</td>
<td>-0.005%</td>
</tr>
<tr>
<td>Unidentified bases</td>
<td>28%</td>
<td>-0.006%</td>
</tr>
</tbody>
</table>

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**Desmodium parvifolium** DC.

“Beggarlice” (English),
“Pega-peg” (Panamanian Spanish)
Eaten as a vegetable by the Indians.
DUKE & VASQUEZ MARTINEZ 1986: p. 75

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**Desmodium pulchellum** BENTH. ex BAKER

[= Dicerma pulchellum (L.) DC. = Hedysarum pulchellum L. = Meibomia pulchella (L.) O.KUNTZE = Phyllodium pulchellum (L.) DESV.]

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排錢草

Whole plant (0.3% Total alkaloids):

<table>
<thead>
<tr>
<th>Component</th>
<th>% of total</th>
<th>Actual %</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-Methoxy-N,N-dimethyltryptamine</td>
<td>27 mg. in 10 gm.</td>
<td></td>
</tr>
<tr>
<td>Bufotenine</td>
<td>3%</td>
<td>-0.011%</td>
</tr>
<tr>
<td>N,N-Dimethyl-tryptamine</td>
<td>11%</td>
<td>-0.041%</td>
</tr>
<tr>
<td>DMT-N-oxide</td>
<td>6%</td>
<td>-0.022%</td>
</tr>
<tr>
<td>5-Methoxy-N-methyltryptamine</td>
<td>Detected</td>
<td>Trace</td>
</tr>
<tr>
<td>6-Methoxy-N-methyl-β-carbolinium cation</td>
<td>Detected</td>
<td>Trace</td>
</tr>
<tr>
<td>6-Methoxy-tetrahydro-harman</td>
<td>7%</td>
<td>-0.026%</td>
</tr>
<tr>
<td>Unidentified base</td>
<td>Detected</td>
<td>Trace</td>
</tr>
</tbody>
</table>

According to the above; Whole plant of young seedlings will yield 3.4 gm. of DMT per kg.

---

S. GHOSAL & B. MUKHERJEE 1964

[Editor’s addition]

However; “the basic extract of the whole plant contains three other related compounds (besides the four bases mentioned above), viz.”

5-Methoxy-N-methyltryptamine (as an oil)
Gramine (as an oil, isolated as picrate in yellow needles from ethanol.)
5-Methoxy-N,N-dimethyltryptamine-N-oxide (as a viscous brown impure oil, purified as a pale violet oil and isolated as picrate in fine crimson-red needles from ethanol.)

GHOSAL & MUKHERJEE 1966

Plant (4 kg. whole plant, dried, finely ground and defatted.)
5-Methoxy-N,N-dimethyltryptamine (Major base. Colorless plates from 8.36 gm. of chromatographic fraction residue)
5-Methoxy-N,N-dimethyltryptamine-N-oxide (17 mg. impure pale violet oil contaminated with lesser amounts of gramine.)
5-Methoxy-N-methyltryptamine (HCl as needles; from 472 mg of impure residue containing 4 alkaloids.)
Buforenine
N,N-Dimethyltryptamine
N,N-Dimethyltryptamine-N-oxide (note; numbers above do not generally reflect pure compounds)

GHOSAL & MUKHERJEE 1966

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**Trout’s Notes on the Genus Desmodium**

16
### Desmodium pulchellum

**Mature plant root** (1.1% Total alkaloid)

<table>
<thead>
<tr>
<th>Component</th>
<th>% of total</th>
<th>Actual %</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMT</td>
<td>41%</td>
<td>0.451%</td>
</tr>
<tr>
<td>DMT-N-oxide</td>
<td>11%</td>
<td>0.121%</td>
</tr>
<tr>
<td>(N-Methyl-DMT cation)</td>
<td>14%</td>
<td>0.154%</td>
</tr>
<tr>
<td>5-Hydroxy-N-methyltryptamine</td>
<td>7%</td>
<td>0.077%</td>
</tr>
<tr>
<td>Bufotenine</td>
<td>Detected</td>
<td>Trace</td>
</tr>
<tr>
<td>Bufotenine-N-oxide</td>
<td>Detected</td>
<td>Trace</td>
</tr>
<tr>
<td>5-Methoxy-DMT</td>
<td>12%</td>
<td>0.132%</td>
</tr>
<tr>
<td>5-MeO-DMT</td>
<td>Metho cation</td>
<td>6%</td>
</tr>
</tbody>
</table>

As 790 mg. of pale yellow viscous liquid from 1.8 kg dried roots.

As 222 mg.+ of brown gum from 1.8 kg dried roots.

As 430 mg. of colorless prisms (as methiodide) from 1.8 kg dried roots.

As 240 mg. of brown viscous liquid from 1.8 kg dried roots.

As 230 mg. of colorless rectangular plates from 1.8 kg dried roots.

As 160 mg. of straw colored plates (as methiodide) from 1.8 kg dried roots.

Data above is from GHOSAL et al. 1972c

**5-MeO-DMT**

<table>
<thead>
<tr>
<th>Component</th>
<th>% of total</th>
<th>Actual %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metho cation</td>
<td>6%</td>
<td>0.066%</td>
</tr>
</tbody>
</table>

As 160 mg. of straw colored plates (as methiodide) from 1.8 kg dried roots.

As 240 mg. of brown viscous liquid from 1.8 kg dried roots.

As 230 mg. of colorless rectangular plates from 1.8 kg dried roots.

As 240 mg. of brown viscous liquid from 1.8 kg dried roots.

As 230 mg. of colorless rectangular plates from 1.8 kg dried roots.

### Mature plant green fruit (0.01% Total alkaloid)

<table>
<thead>
<tr>
<th>Component</th>
<th>% of total</th>
<th>Actual %</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMT</td>
<td>12%</td>
<td>~0.001%</td>
</tr>
<tr>
<td>DMT-N-oxide</td>
<td>72%</td>
<td>~0.007%</td>
</tr>
<tr>
<td>2-Methyl-β-carbolinium cation</td>
<td>8%</td>
<td>&lt;0.001%</td>
</tr>
<tr>
<td>6-Methoxy-1,2-dimethyl-β-carbolinium cation</td>
<td>2%</td>
<td>&lt;0.001%</td>
</tr>
<tr>
<td>Unidentified bases</td>
<td>6%</td>
<td>&lt;0.001%</td>
</tr>
</tbody>
</table>

Data above is from GHOSAL et al. 1972c

**Gramine in stem-leaf**

DMT in root, stem-leaf and fruit

DMT-N-oxide in root, stem-leaf and fruit

DMT metho cation in root and stem-leaf

5-Hydroxy-N-methyltryptamine in root

Bufotenine in root and stem-leaf

5-MeO-DMT in stem-leaf

5-MeO-DMT in root, stem-leaf and flower

Harman in fruit and seed

6-Methoxy-tetrahydro-β-carboline in stem-leaf

6-Methoxy-tetrahydroharman in root and seed

N\textsubscript{c}-Methyl- H\textsuperscript{2}-harman in seed

GHOSAL 1972a

The fully aromatic β-carbolines were found to possess anticholinesterase activity by GHOSAL et al. 1977b]

**DMT and 5-MeO-DMT in whole plant, root, stem, leaf and fruit**


A new glycoside (the 1-Glucosylrhamnoside of physcion) was identified in seeds.


Widely distributed throughout India.

Bark decoction used antitodally to poisoning, for diarrhea, eye diseases and hemorrhages.

Flowers are given for biliousness.

GHOSAL & MUKHERJEE 1964 and GHOSAL et al. 1972c

**Desmodium pulchellum** Benth. is found throughout India, Ceylon and Malaya.

A decoction of the bark is used in diarrhoea, haemorrhage, and diseases of the eye.

It is generally believed in Assam that if a branch is kept under or anywhere in the house it drives away bedbugs from it.

The flowers are given for biliousness.”

Assam: Ursi

Bengal: Jatasalpar

Burma: Toungtamin

Canarese: Jenukaddi, Kadakuralite, Kadumadura, Tigure

Garwhal: Thap

Hindi: Jat salpar

Jharna: Takanlama

Leyte: Calaica

Malayalam: Kattumutira

Philippines: Mangui

Sanskrit: Jatasalpara

Santali: Birkapi

Tagalog: Payang-payang

Telugu: Karrantinta, Kondoninta, Sarivi

Uriya: Jotasalopornni, Kodakotirichunddo, Krishnopornii

Visayan: Calayacay, Callacay

BJAB 1989: page 44

“Chapor”, “Dheknanadak”, “Jeetedari”

Said to repel bedbugs.

Root is used for burning sensations in the abdomen.

Flowers are used for dental caries.

Stem bark is given for headache.

Active biologically as a hypotensive agent.


“Chinese also use Desmodium pulchellum (L.) BENTH. to expel rheumatic fever and convulsions (in children). They consider it good for rheumatism and toothache, believing it dissolves internal blood clots and builds new red cells.

Malaysians use the root decoction for puerperium. Filipinos use the leaves for pocks and ulcers” cites NIH 1974

DUKE & AYENSU 1985: Page 322

P’ai-chien-ts’ao”; “String of coins”; Radix Desmodii Pulchelli

HU, Shiu-yung 1980

Occurs throughout the hills of India also in the eastern Himalayas and Meghalaya. Found also in Burma, China, Malasia, Nepal, Ryukyu, Taiwan, Thailand and Vietnam.

Desmodium racemosum (THUNB.) DC
[= Desmodium oxyphyllum DC]

山马蝗
Pinyin: Shàn mǎ huáng

English: Chinese desmodium
Uses: Tincture a respiratory stimulant, decoction a diaphoretic [citing L.M. PERRY 1980]
Chem.: Kaempferitrin [citing JIANGSU NEW MEDICAL COLLEGE (eds.) 1979]
DUKE & AYENSU 1985: page 323

Shan-ma-huang
Chinese Desmodium
Herba Desmodii Racemosi
HU, S.-Y. 1980: #1181

5-MeO-DMT in whole plant
OTT 1994 cited HSU 1970

5-Methoxy-N.N-dimethyltryptamine (whole plant)
HSU et al. 1982 cited HSU, Hong-Yen 1970
Also mentioned in HSU et al. 1986

“Nusubitonasi” (Japan)
Pounded seeds are eaten as a steamed ball.
VON REIS ALTSCHUL 1973: #1771.

Desmodium ramosissimum G.DON
[= Desmodium mauritanum (Willd.) DC]

Perennial herb from tropical Africa.
Used for dysentery, eye diseases and fever.
Also as an excitant in some parts of Africa.
UPHOF 1968: p. 177.

Used medicinally in West Tropical Africa, Madagascar and La Reunion.
CAIUS 1989: page 42

Desmodium repandum (VAHL.) DC
[= Desmodium scalpe DC = Desmodium strangulatum
WEIGHT & ARN. = Hedysarum repandum VAHL. = Meibomia repanda (VAHL.) O.KUNTZE = Meibomia scalpe (DC.) O.KUNTZE.]

“Kuluko la kuku” (Shambaa)
Leaf juice is given to infants for abdominal pains.
Roots are used for treating large sores.

[as Desmodium scalpe DC.]
Bamenda: “Mnerka mini”
La Reunion: “Colle-colle”, “Fausse pistache marrone”

Desmodium retroflexum DC

Indo-China: “Dai phong nui”
Occurs in Assam, Sylhet, Tenasserim and occasional in China.
Root: Aperient, deobstruent, emmenagogue and stomachic.
Used medicinally in Indo-China.
CAIUS 1989: page 44-45

Desmodium salicifolium (POIR.) DC

“Mtaroro” (Ngoni)
Leaves are pounded and used for eye ailments.

Woody herbaceous plant from tropical Africa.
Used as a green manure in some African plantations.

Desmodium styracifolium (Osbeck) Merr. [= Desmodium capitatum (Burm.f.) DC. = Desmodium retroflexum (L.) DC. = Hedysarum capitatum Burm.f. = Meibomia capitata (Burm.f.) O.Kuntze = Nicolsonia styracifolia (Osb.) Desv.]
Known as:
Chin-ch’ien-ts’ao
Coin-leaved Desmodium
Herba Desmodii Styracifolii
S.-Y. Hu 1980

“Tung Tsiu Se T’so”
“...medicine” (China)
VON REIS ALTSCHL. 1973: #1772

Dried plant material, purchased, in 1994, as this plant, from apothecaries in San Francisco’s Chinatown, did not show the presence of any alkaloids that reacted with Ehrlich’s reagents.

Sold under the name of Herba Kam Tsin Tsao; packaged by the Lam Hoi Trading Co., Flat G, 20/F, 85 Connaught Rd., West, Hong Kong.]

The Apotheker was given a xerox of a page from DUKE & AYENSU showing both the Chinese characters and a drawing of the plant. The plant material appeared to conform to the description for the species and cost $4 for a one pound package. The material was sold as a treatment for “gravel”

They were familiar with both this species and also D. racemosum but insisted that neither is commonly used anymore. They first attempted to substitute Albizia julibrissin bark and Ophiopogon japonica tubers as a “better” substitute for D. racemosum (They evidently assumed it was intended for use as a respiratory stimulant. Both plants are known to contain physiologically active substituted phenethylamines.)

[After much insistence, they finally sold me several ounces of dried flowers and buds that they claimed to be D. racemosum but which did not conform to its description nor even to that of a Desmodium species. No alkaloids were detected in whatever it was that they sold us. Plant parts were inadequate for determining the actual species.]

tlc 1994 by J. APPLESEED.

Occurs in India (in Assam, Karnataka, Kerala, Meghalaya and Sikkim). Found also in Bangladesh, Burma, China, Malaysia, Sri Lanka and Thailand.
SANJAPPA 1991: page 162.
Desmodium tortuosum (Sw.) DC
 [= Hedysarum purpureum Mill. = Hedysarum tortuosum Swartz. = Meibomia purpurea (Mill.) Vahl. = Meibomia
tortuosa (Swartz) O. Kuntze.]

“Beggarweed”
Perennial herb occurring in the tropics and subtropics.
Used as manure in warm regions.
UPHOF 1968: p. 177.

Native to tropical America. Now introduced and
naturalized in Old World tropics. In India: naturalized in
Gujarat, Karnataka, and Uttar Pradesh.
SANJAPPA 1991: page 162.

Desmodium triflorum DC
 [= Hedysarum triflorum L. = Meibomia triflora (L.)
O. Kuntze = Nicholsonia triflora (L.) Greisb.]

Leaf
(total alkaloids 0.01-0.015% by dry weight):
β-phenethylamine (major)
Tyramine
Indole-3-acetic acid
N,N-Dimethyltryptophan methyl ester
Hypaphorine
Hypaphorine methyl ester
Trigonelline
Choline
Betaine
GHOSAL et al. 1971c

Leaf
[Relative % of total alkaloid fraction]
(0.01% total alkaloids by dry weight):
β-phenethylamine [17%]
Tyramine [9%]
Hordenine [Trace]
Indole-3-Acetic acid [12%]
DMT-N-oxide [Trace]
N,N-Dimethyltryptophan [5%]
S-(+)-N,N-Dimethyltryptophan methyl ester [5%]
Hypaphorine [8%]
Hypaphorine methyl ester [Trace]
Trigonelline [Trace]
S-(-)-Stachydrine [2%]
Choline [39%]
Betaine [62%]
Other bases
GHOSAL et al. 1972d

Stems
[Relative % of total alkaloid fraction]
(0.008% total alkaloids by dry weight):
β-phenethylamine [15%]
Tyramine [7%]
Hordenine [Trace]
Indole-3-Acetic acid [Trace]
N,N-Dimethyltryptophan [Trace]
DMT-N-oxide [3%]
S-(+)-N,N-Dimethyltryptophan methyl ester [2%]
Trigonelline [4%]
S-(-)-Stachydrine [3%]
Choline [39%]
Betaine [62%]
Other bases
GHOSAL et al. 1972d

Roots
(8.3 kg dry wt) (0.01% Total alkaloids):

<table>
<thead>
<tr>
<th>% of total</th>
<th>yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>β-phenethylamine</td>
<td>6% 68 mg</td>
</tr>
<tr>
<td>Tyramine</td>
<td>11% 97 mg</td>
</tr>
<tr>
<td>Hordenine</td>
<td>3% 26 mg</td>
</tr>
<tr>
<td>3,4-Dihydroxy-phenethyl-trimethyl-ammonium cation (as hydroxide)</td>
<td>3% 28 mg</td>
</tr>
<tr>
<td>Indole-3-Acetic acid</td>
<td>Trace</td>
</tr>
<tr>
<td>DMT-N-oxide</td>
<td>4% 41 mg</td>
</tr>
<tr>
<td>N,N-Dimethyltryptophan</td>
<td>Trace</td>
</tr>
<tr>
<td>S-(+)-N,N-Dimethyltryptophan methyl ester</td>
<td>2% 25 mg</td>
</tr>
<tr>
<td>Hypaphorine methyl ester</td>
<td>2% 25 mg</td>
</tr>
<tr>
<td>Hypaphorine (as HCl)</td>
<td>5% 37 mg</td>
</tr>
<tr>
<td>Trigonelline</td>
<td>1% 13 mg</td>
</tr>
<tr>
<td>S-(-)-Stachydrine</td>
<td>2% 21 mg</td>
</tr>
<tr>
<td>Choline</td>
<td></td>
</tr>
<tr>
<td>Betaine</td>
<td>58% 23 mg</td>
</tr>
<tr>
<td>Other bases</td>
<td></td>
</tr>
</tbody>
</table>

GHOSAL et al. 1972d

Roots
(Total alkaloids 0.01-0.018% by dry weight):
Hypaphorine (major)
N,N-Dimethyltryptophan
DMT-N-oxide
β-phenethylamine
Unidentified quaternary β-phenethylamine
Betaine
Choline
GHOSAL et al. 1971c

Tryptamine in stem-leaf
Hypaphorine in root and stem-leaf
GHOSAL 1972a

DMT-N-oxide in root
OTT 1994 cited GHOSAL et al. 1972d
Sweethearts, “Kolante”, “Cacoyer” - Dominica
Medicinal: Species of Desmodium are used in baths.
   Common in waste grounds in the West Indies.
   A small perennial weed with a prostrate habit. The leaves are obovate, trifoliate. The flowers are very small
   and red-mauve. The pods are 1 cm long and segmented
   along the sides, usually 3-6 jointed.
   HONEYCHURCH 1980

Used in the treatment of asthma and cough.
   Also “offers protection against acetylcholine and
   histamine-aerosol-induced bronchospasms”
   ADDY & AWUMEY 1984

Also reported by GHOSAL et al. 1972d who recorded a 30
minute onset and a four hour duration of activity. They
additionally found that the LD₅₀ of the total alkaloid
fraction was 215.5 mg/kg when given ip to mice.

Leaves used as galactagogue, for diarrhea, dysentery
and convulsions.
Roots for coughs, asthma and applied to wounds and
abscesses.
Common throughout plains of India and in the
Himalayas up to 7000 ft.
GHOSAL et al. 1972d

Cosmopolitan tropics.
French: Trefle noir [Bourb.]
VAN WIJK 1911

“Jaharipana” “Khataldi” (names used by Bhils in
Mount Abu area (border of Rajasthan and Gujarat
states, in western India)
Leaf paste used on wounds, eruptions and abscesses
SEBASTIAN & BHANDARI 1984

In eastern Rajasthan:
Leaves are used as a remedy for diarrhea, dysentery
and applied to wounds and abscesses.
SINGH & PANDEY 1980

“Desmodium triflorum” DC. is common throughout
India: it is cosmopolitan in the tropics.
   The fresh leaves are applied to wounds and abscesses
   that do not heal well. They are used internally as a
galactagogue.
   A paste of the bruised leaves with kamala is applied to
   indolent sores and itch. In the mofussil, the fresh juice
   of the plant is given to children for coughs.
   In Ceylon, it is used in dysentery.

In Gold Coast it is recommended both as a laxative and as
a cure for dysentery.”
Used medicinally in West Tropical Africa, and Mauritius.”
Bengal: Kodalia, Kudaliya
Bombay: Janglimer, Ranmeti
Ceylon: Sirupullady
Guam: Agsom, Apo
Gujerati: Jhinopanddhiho
Hindi: Kudaliya
La Reunion: Trefle noir
Marathi: Ranmeti
Mauritius: Trefle des chasseurs, Outoupilli, Kodalia
Mende: Koli-niki
Mundari: Jajaladbibir, Jajalad tasad
North-Western Provinces: Kudalig
Porebunder: Jhindopanddhiho
Sinhalese: Hinundupiya
Tagalog: Pacpaclangao
Tegula: Muntamanda, Munuddamoddu
CAIUS 1989: pages 42, 45

“Khataldi”, “Kunnappalat”, “Pookarisa”, “Tinikoriannon”
   Leaves are used medicinally for abscesses, diarrhea,
dysentery, diseases of the nails, eruptions, toothaches, and
wounds.
Whole plant used for body aches and swellings.
Unspecified parts used for breast pain, colic, diarrhea,
mennorrhea, sores, spleen complaints, and whitlow.

“Marlomin”:
Boiled into tea which is used for rheumatism in Haiti.
Said to be eaten greedily by stock in British Honduras.
Also said to be fodder plant in savannas of Colombia
(called “Angelica”)
   Leaves are eaten as a vegetable in Burma.
VON REIS ALTSCHEL 1973: #1769.

Native to Old and New World tropics.
Used in cases of dysentery.
Recommended as a green manure and cover-crop.
UPHOF 1968: p. 177.

In India: throughout plains up to 2500 meters in
Kashmir. Also occurs in Africa, America, Australia,
Bhutan, Burma, China, Malesia, Pacific Islands, Pakistan,
Ryukyu, Sri Lanka, Taiwan, and Thailand.
**Desmodium triquetrum (L.) DC**

[= *Hedysarum triquetrum* L.]

Pinyin: hú lu chá

Uses: Plant: Applied to abscesses; a tonic for dyspepsia, hemorrhoids, infantile spasms; insecticide, vermicide.  
Notes: Burmese use the plant to treat worms. Indonesians use the leaves externally for lumbago and internally for gravel.  
DUKE & AYENSU 1985: vol. 1 page 324; cited PERRY 1980

**Desmodium triquetrum = (Pteroloma triquetrum)**  
Hu-lu-ch’a; Bottle-gourd Tea; Herba Desmodii Triquetri  
Hu et al. 1980

“Pak Lo Siṭ”: “...used as medicine.” (China)  
“Laught thay”: “…used to kill the warm.” (Burma)  
Used as a ‘remedy’ [heilmittel] in N. Sumatra.  
VON REIS ALTSCHUL 1973: #1773

“Adakkachokki”, “Salparni” [Ed. last common name also used for *D. gangeticum*]  
Leaf is used for abdominal pains, coughs, and colds.  
Whole plant is given for fevers.  
Root is used to treat snakebite.  

Occurs in India (in Andaman, Bihar, Karnataka, Meghalaya, the Nicobar Islands, Orissa, Punjab, Tamil Nadu, and Uttar Pradesh). Found also in Australia, Bhutan, Burma, China, Indo-China, Malaysia, New Caledonia, Pacific Islands, Sri Lanka and Thailand.  

**Desmodium umbellatum (L.) DC**

[= *Desmodium australis* (WILLD.) DC = *Desmodium grandifolium* DC. = *Hedysarum arboresum* ROXB. = *Hedysarum australe* WILLD. = *Hedysarum umbellatum* L.]

“Par-po”:  
Young tips chewed with betel nut and put in mouth of sick babies. (Solomon Islands)  
“Sauhava”:  
Leaves are eaten as remedy for scaly skin resulting from too heavy of usage of “yanjona” [Kava kava]  
(Seras in Fiji Islands)  
VON REIS ALTSCHUL 1973: #1775

“Damie”  
Leaf used medicinally for fevers  
Fruit is eaten as food.  

Wood is used for fuel in Taiwan.  

“Supposed by some to cause “Chillagoe disease” of horses.”

**Desmodium velutinum (WILLD.) DC**

[= *Desmodium latifolium* DC. = *Desmodium planifolium* (WIGHT & ARN.) MERR. & CHIN. = *Desmodium virgatum* ZOLL. et MOR. ex PRAIN = *Hedysarum latifolium* ROXB. = *Meibomia velutina* (WILLD.) O.KUNTZE.]

Said to be poisonous. (Sierra Leone)  
VON REIS ALTSCHUL 1973: #1777

“Latakari”  
Dried shoots are used for brooms  

Common names: “Chitkiboota”, “Latkan”  
CCRS 1990: page 63

Occurs throughout India (up to 1350 meters in the Himalayas). Found also in Africa (tropical), Bhutan, Burma, China, Laos, Madagascar, Malesia, Nepal, Sri Lanka, Thailand and Vietnam.  

**Desmodium spp. not identified**

Unidentified species known as “Ya-dab-kamlang-phra” in Siam.  
“Medicinal root used as neurotic.”  
VON REIS ALTSCHUL 1973: #1774

Unidentified species known as “Llina caiba” by Cuna and “Pega-pega” by Panamanian Spanish speakers.  
Macerated fruits are given to induce reciprocal affection in a desired lover in Ailigandi. [see similar usage under *Desmodium adscendens*]  
DUKE & VASQUEZ MARTINEZ 1986: page 75.

Unidentified species known as “Zàngò-dá-mà.pìndì”  
“Pour résorber une HERNIE SCROTALE, les Aka font des scarifications au niveau des testicules. Ils pilent quelques feuilles qu’ils font réchauffer quelques instants sur le feu et les appliquent sur les scarifications. Une grande feuille permet de les maintenir en place et sert en même temps de bandage hernaire.”  
Elizabeth MOTTE 1980: page 376.

**Footnotes**

1 This value is derived from combining the figures for roots and above ground parts.
"More than you need to know?"

Alkaloid Summary

for the genus Desmodium

Compiled and edited by K. Trout
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[Note: "Whole Plant" indicates only that the analyzed extract was prepared from the whole plant. It does not necessarily imply that the alkaloid in question occurs in the whole plant.]

All discrepancies from Ghosal and coworkers have been left intact.

Phenethylamines:

β-Phenethylamine

Desmodium cephalotes

In stem-roots (24 mg. from 3.2 kg) [7]

Major alkaloid in leaf (Low concentration.) [7]

Desmodium gangeticum

Roots (Amount not given.) [6, 17] (0.28 gm. from 1.6 kg of dried roots.) [5]

Desmodium gyrans

Leaves (0.0055% by dry weight; 0.11 gm. from 2 kg of dry leaves) [14]

Desmodium triflorum

Leaf (~ 0.002% by dry weight; 0.11% of 0.01% total alkaloids) [16]

Stems (~ 0.001% by dry weight; 15% of 0.008% total alkaloids) [16]

Roots (< 0.002% by dry weight; 6% of 0.01% total alkaloids) [68 mg from 8.3 kg of dry roots] [16]

Major alkaloid in Leaf / Minor in roots. (Amounts not given) [13]

A β-Hydroxyphenethylamine [Not identified.]

Desmodium gangeticum

Roots (New alkaloid. Amounts not given.) [Unidentified in this paper. Probably is the same compound as the β-ketophenethylamine mentioned in Ghosal and Bhattacharya (1972).] [5]

N,N-Dimethyl-β-keto-phenethylamine

Desmodium gangeticum

Roots (Previously unreported) [6]

Tyrmine

Desmodium cephalotes

In stem-roots: 87 mg from 3.2 kg dried material. [7]

Minor alkaloid in leaf. [7]

Desmodium tiliaefolium

Roots (48 mg. from 2.3 kg. - dry weight) (also present in stems in lower concentrations?) [11]

Desmodium triflorum

Leaf (~ 0.002% by dry weight; 17% of 0.01% total alkaloids) [16]

Stems (~ 0.001% by dry weight; 15% of 0.008% total alkaloids) [16]

Roots (~ 0.002% by dry weight; 6% of 0.01% Total alkaloids) [68 mg. from 8.3 kg of dry roots] [16]

Major alkaloid in Leaf / Minor in roots. (Amounts not given) [13]

β-Hydroxy-N-methyl-3,4-dimethoxy-β-phenethylamine

[= Normacromerine]

Desmodium tiliaefolium

Roots (Amount not given. 28 mg of impure gum from 2.3 kg of dry roots.) (in stems in lower concentrations?) [11]

N,N-Dimethyl-3,4-dimethoxy-β-phenethylamine

Desmodium tiliaefolium

Roots (Amount not given. 41 mg of impure liquid from 2.3 kg. of dry roots plus an additional 9 mg of alkaid.) (also present in stems in lower concentrations?) [11]

3,4-Dihydroxy-phenethyl-trimethyl-ammonium cation (as hydroxide)

Desmodium triflorum

Roots [3% of 0.01% Total alkaloids] {28 mg. from 8.3 kg (dry weight) [16]

Tetrahydroisoquinolines:

Salsolidine

Desmodium cephalotes

Traces in leaf. [7]

Stem-Roots (28 mg. from 3.2 kg dry weight) [(±) salsolidine] [7]

Desmodium tiliaefolium

Roots (72 mg. from 2.3 kg. - dry weight) (also present in dried roots.) [5]

Hordenine

Desmodium cephalotes

Major alkaloid in stem-roots (120 mg. from 3.2 kg of dried plant material.) [7]

Desmodium gangeticum


Roots (~ 0.051% by dry weight; 0.82 gm. + from 1.6 kg. of dried roots.) [5]

Desmodium tiliaefolium

Roots (12 mg. from 2.3 kg. - dry weight) (also present in stems in lower concentrations?) [11]

Desmodium triflorum

Leaf [Trace] [16]

Stems [Trace] [16]

Roots [3% of 0.01% Total alkaloids] {26 mg. from 8.3 kg of dry material} [16]

Candicine

Desmodium cephalotes

Roots (46 mg. from 3.2 kg dry weight) [7]

Desmodium gangeticum

Roots. (0.55 gm. of impure from 1.6 kg of dried roots.) [5] [Said by [17] to have been the first reported isolation of this compound from the Leguminosae.] [17]

Roots (Amount not given.) [6, 12]

3,4-Dimethoxy-β-phenethylamine

Desmodium tiliaefolium

Roots (46 mg. from 3.2 kg dry weight) [7]

Desmodium gangeticum

Roots. (0.55 gm. of impure from 1.6 kg of dried roots.) [5] [Said by [17] to have been the first reported isolation of this compound from the Leguminosae.] [17]

Roots (Amount not given.) [6, 12]

3,4-Dimethoxy-β-phenethylamine

Desmodium tiliaefolium

Roots (Amount not given. 28 mg of impure gum from 2.3 kg of dry roots.) (in stems in lower concentrations?) [11]

β-Hydroxy-N-methyl-3,4-dimethoxy-β-phenethylamine

[= Normacromerine]

Desmodium tiliaefolium

Roots (Amount not given. 28 mg of impure gum from 2.3 kg of dry roots.) (in stems in lower concentrations?) [11]

N,N-Dimethyl-3,4-dimethoxy-β-phenethylamine

Desmodium tiliaefolium

Roots (Amount not given. 41 mg of impure liquid from 2.3 kg. of dry roots plus an additional 9 mg of alkaid.) (also present in stems in lower concentrations?) [11]

3,4-Dihydroxy-phenethyl-trimethyl-ammonium cation (as hydroxide)

Desmodium triflorum

Roots [3% of 0.01% Total alkaloids] {28 mg. from 8.3 kg (dry weight) [16]
stems in lower concentrations?) [11]

**Salsoline**
*Desmodium tiliaeefolium*
Roots (32 mg. from 2.3 kg. - dry weight) (also present in stems in lower concentrations?) [11]

**Indoles other than tryptamines (including tryptophans):**

**Indole-3-acetic acid**
*Desmodium triflorum*
Leaf [12% of 0.01% total alkaloids] (dry weight) [16]
(Minor alkaloid) [13]
Stems [Trace] [16]
Roots [Trace] [16]

**Gramine**
*Desmodium pulchellum*
Whole plant (Minor alkaloid) [9] (Amount not given) [10]
Stem and Leaf of young seedlings. [2% of 0.12% Total alkaloid] (~ 0.002% by dry weight) [15]
Stem and leaf of mature plant [7% of 1.4% Total alkaloid] {0.098% by dry weight} [15]
Stem-leaf (Amount not given) [4]

**Abrine** (N-Methyltryptophan)
*Desmodium tiliaeefolium*
Roots (13 mg from 2.3 kg. - dry weight) (also present in stems in lower concentrations?) [11]
Root (Amount not given) [4]

**N,N-Dimethyltryptophan**
*Desmodium triflorum*
Leaf [5% of 0.01% total alkaloids] (dry weight) [16]
(Minor. Amount not given) [13]
Stems [Trace] [16]
Roots [Trace] [16] [Amount not given] [13]

**S- (+) N,N-Dimethyltryptophan methyl ester**
*Desmodium triflorum*
Leaf. (Minor. Amount not given) [13] [Trace] [16]
Stems [Trace] [16]
Roots [2% of 0.01% Total alkaloids] {25 mg. from 8.3 kg} (dry weight) [16]

**Hypaphorine methyl ester**
*Desmodium triflorum*
Leaf. (Minor. Amount not given) [13] [Trace] [16]
Stems [Trace] [16]
Roots [2% of 0.01% Total alkaloids] {25 mg. from 8.3 kg} (dry weight) [16]

**Tryptamines:**

**Tryptamine**
*Desmodium tiliaeefolium*
Roots (17 mg. from 2.3 kg. - dry weight) (also present in stems in lower concentrations?) [11]

**Desmodium triflorum**
Leaf [8% of 0.01% total alkaloids] (dry weight) [16]
Minor in leaf. (amount not given) [13]
Stem [2% of 0.008% total alkaloids] [16]
Roots [5% of 0.01% total alkaloids] {37 mg. from 8.3 kg as HCl} (dry weight) [16]
Root and stem-leaf (Amount not given) [4]
Major in roots. (amount not given) [13]

**Desmodium caudatum**
Major alkaloid in roots [0.087% by dry weight. Ed.: Procedure likely resulted in some loss.] [21]
Minor alkaloid in stem [0.004% dry wt.] [21]

**Desmodium gangeticum**
Aerial parts [? gm. of thick oil + 0.41 gm (latter as chloroform soluble acetate) obtained from 1 kg of fresh wet material.] [3]
Green Plant (Stem and Leaf) [4, 6]
Roots (Amount not given) [4, 6] [0.38 gm. from 1.6 kg. of dried roots. i.e. 0.02% DMT] [5]
Seeds [6]
Fruit [4]

**Desmodium gyrans**
Leaves (82 mg. from 2 kg of dry) [14]
Roots (Minor alkaloid.) [14]

**Desmodium pulchellum**
Whole plant (Minor alkaloid) [8] (Mention.) [9] (Amount not given) [10]
Stem and leaf of young seedling [~ 0.074% by dry weight; 62% of 0.12% Total alkaloid] [15]
Stem and leaf of mature plant [0.294% by dry weight; 21% of 1.4% Total alkaloid] [15]
Root of young seedling [~ O.27% dry weight; 73% of 0.37% Total alkaloid] [15] [i.e. 27 mg. in 10 gm. of dried material]
Root of mature plant [0.451% by dry weight; 41% of 1.1% Total alkaloid] [Also, in same paper: 1.8 kg dried roots yielded 0.7 gm + 0.09 gm; i.e. 0.043%.] [15]
Fruit (green) of mature plant [12% of 0.01% Total alkaloid] [1.8 kg dried roots yielded 0.7 gm + 0.09 gm; i.e. 0.043%.
Seeds (ripe) of mature plant [4% of 0.02% Total alkaloid] [0.001% by dry weight]
Root, stem-leaf, and fruit (Amounts not given) [4]
N,N-Dimethyltryptamine-N-oxide
Desmodium gangeticum
Aerial parts [0.21 gm. + 0.12 gm. (latter as chloroform soluble acetate) from 1 kg. of fresh wet material.] [3]
Green Plant (Stem and Leaf) [4, 6, 13]
Roots (Amount not given.) [6, 17]
(0.12 gm. + 0.02 gm. from 1.6 kg. of dried roots.) [5]
Fruit [4]
Seeds [6, 12]
Desmodium gyrans
Leaves (0.18+ gm. from 2 kg) [14]
Stem / leaf [12]
Roots. Minor alkaloid. Amount not given. [14]
Desmodium pulchellum
Whole plant (Minor alkaloid) [8] (Mention.) [9] (Amount not given) [10]
Stem and leaf of young seedling [0.023% by dry weight; 19% of 0.12% Total alkaloid] [15]
Stem and leaf of mature plant [0.070% by dry weight; 5% of 1.4% Total alkaloid] [15]
Root of young seedling [~ 0.011% by dry weight; 3% of 0.37% Total alkaloid] [15]
Root of mature plant [0.121% by dry weight; 11% of 1.1% Total alkaloid] [Also, in same paper: 1.8 kg of dried roots yielded 0.18 gm + 0.042 gm; i.e. 0.012%.] [15]
Fruit (green) of mature plant [~ 0.007% by dry weight; 72% of 0.01% Total alkaloid] [15]
Seeds (ripe) of mature plant [Trace] [15]
Root, Stem-leaf and Seeds [12]
Root, stem-leaf and fruit (Amounts not given) [4]
Desmodium triflorum
Leaf [trace] [16]
Stems [3% of 0.008% total alkaloids] (dry weight) [16]
Roots [4% of 0.01% Total alkaloids] [41 mg from 8.3 kg] (dry weight) [16]
Minor in roots. (amount not given) [13]
N,N-Dimethyltryptamine metho cation
Desmodium pulchellum
Root and stem-leaf (Amounts not given) [4]
Root of young seedling [~ 0.041% by dry weight; 11% of 0.37% Total alkaloid] [15]
Root of mature plant [0.154% by dry weight; 8% of 1.4% Total alkaloid] [15]
Root of young seedling. [Trace] [15]
Root and stem-leaf (Amount not given) [4]
5-Hydroxy-N-methyltryptamine
Desmodium gyrans
Leaf (68 mg. from 2 kg. of dry leaves) [14]
Desmodium pulchellum
Whole plant (Minor alkaloid) [8] (Mention.) [9] (Amount not given) [10]
Stem and leaf of young seedling [~ 0.011% by dry weight; 9% of 0.12% Total alkaloid] [15]
Stem and leaf of mature plant [0.112% by dry weight; 8% of 1.4% Total alkaloid] [15]
Root of mature plant. [Trace] [15]
Root and stem-leaf (Amount not given) [4]
Bufotenine-N-oxide
Desmodium caudatum
Major alkaloid in stem (0.04% by dry weight.) [21]
Desmodium gnys
Leaf (68 mg. from 2 kg. of dry leaves) [14]
Desmodium pulchellum
Whole plant (Minor alkaloid) [8] (Mention.) [9] (Amount not given) [10]
Stem and leaf of young seedling [~ 0.011% by dry weight; 9% of 0.12% Total alkaloid] [15]
Stem and leaf of mature plant [0.112% by dry weight; 8% of 1.4% Total alkaloid] [15]
Root of mature plant. [Trace] [15]
Root and stem-leaf (Amount not given) [4]
5-Methoxy-N-methyltryptamine
Desmodium gyrans
Leaf (97 mg. from 2 kg. of dried leaves) [14]
Desmodium pulchellum
Whole plant (Minor alkaloid) [8] (Amount not given) [9]
Stem-leaf (Amounts not given) [4]
Stem and leaf of young seedling [~ 0.011% by dry weight; 8% of 0.02% Total alkaloid] [15]
Root of young seedling. [Trace] [15]
Seeds (ripe) of mature plant [~ 0.002% by dry weight; 8% of 0.02% Total alkaloid] [15]
5-Methoxy-N,N-dimethyltryptamine
Desmodium gangeticum
Aerial parts (0.057% by wet weight; 0.57 gm. from 1 kg. of fresh wet material.) [3]
Stem-leaf [4]
Green Plant (Stem and Leaf) [6]
Desmodium gyrans
Leaves (35+ mg. from 2 kg) [14]
In stem/ leaves [4]
Roots [4]
Desmodium pulchellum
Whole plant (0.2-0.25% by dry weight.) [8] (Major alkaloid) [9] (Amount not given. Plates crystallized from 8.36 grams of impure chromatographic fraction residue; from 4 kg of dried whole plant.) [10]
Stem and leaf of young seedling [Trace.] [15]
Stem and leaf of mature plant [0.476% by dry weight; 34% of 1.4% Total alkaloid] [15]
Root of mature plant [0.132% by dry weight; 12% of 1.1% Total alkaloid] [Also, in same paper; 1.8 kg. of dried roots yielded 0.23 gm; i.e. ~ 0.013% by dry weight.] [15]
Seeds (ripe) of mature plant [0.002% by dry weight; 10% of 0.02% Total alkaloid]

Desmodium racemosum

Whole plant. (Amount not given) [18]
5-Methoxy-N,N-dimethyltryptamine-N-oxide

Desmodium gangeticum

Aerial parts[0.18 gm. from 1 kg of fresh wet material]
Stem-leaf [4]
Green Plant (Stem and Leaf) [6]
Desmodium gyrans
Leaves (trace) [14]
Desmodium pulchellum

Whole plant (Minor alkaloid) [First reported occurrence of this alkaloid.] [9] (Minor alkaloid) [17 mg. as an impure violet oil, contaminated with gramine, was obtained from 4 kg. of dried whole plant.] [10]
Stem and leaf of mature plant [0.070% by dry weight; 5% of 1.4% Total alkaloid] [15]
Stem-leaf (Amounts not given) [4, 17]
5-Methoxy-N,N-dimethyltryptamine metho cation

Desmodium pulchellum

Root of mature plant [0.066% by dry weight; 6% of 1.1% Total alkaloid] [15]

β-Carbolines:
As has been noted by Allen and Holmstedt (1980) [2], all identifications of β-carbolines, especially with regards to degree of saturation, should be regarded with caution due to similar properties and relative ease of interconversion. The below are given as reported.

A β-carboline [Not identified.]
Desmodium gangeticum

Seeds. [6]
Harman [= 1-Methyl-β-carboline]

Desmodium pulchellum

Fruit and seed (Amounts not given) [4]
Leptocladiene [= N 6-Methyl-H 12-harman = 2-Methyl-H 13-harman = 1,2-Dimethyl-H 14-β-carboline]

Desmodium gangeticum

Aerial parts (0.03 gm. from 1 kg. of fresh wet material)
[3]
Green Plant (Stem and Leaf) [6]
Stem-leaf (Amount not given.) [4]
Desmodium gyrans

Stem/leaves (Amount not given.) [4]
Desmodium pulchellum

Seed (Amount not given) [4]

N 6-Methyl-β-carbolinium cation [= 2-Methyl-β-carbolinium cation]

Desmodium pulchellum

Fruit (green) of mature plant [ < 0.001% by dry weight; 8% of 0.01% Total alkaloid] [15]
Seeds (ripe) of mature plant [ ~ 0.003% by dry weight; 13% of 0.02% Total alkaloid] [15]
6-Methoxy-tetrahydro-β-carboline

Desmodium pulchellum

Stem-leaf (Amounts not given) [4]
6-Methoxy-tetrahydroharman [= 6-Methoxy-1-methyl-H 12-β-carboline]

Desmodium gangeticum

Root and seed (Amounts not given) [4]
6-Methoxy-N 6-methyl-H 12-β-carboline [= 6-Methoxy-2-methyl-H 12-β-carboline]

Desmodium gangeticum

Green Plant (Stem and Leaf) (Previously unreported in nature) [6]

Desmodium pulchellum

Stem and leaf of mature plant [2% of 1.4% Total alkaloid] {0.028% by dry weight} [15]
Root of young seedling [7% of 0.37% Total alkaloid (~ 0.026% by dry weight)] [15]
Root of mature plant [9% of 1.1% Total alkaloid] (0.099% by dry weight) [15]
Seeds (ripe) [3% of 0.02% total alkaloids.] ( ~ 0.001% by dry weight) [15]
6-Methoxy-N 6-methyl-β-carbolinium cation [= 6-Methoxy-2-methyl-β-carbolinium cation.]

Desmodium pulchellum

Fresh aerial parts (0.07 gm. from 1 kg.) (Purified; 0.04 gm.) [3]
Stem-leaf (Amount not given.) [4]
Seeds [12]

Desmodium pulchellum

Seeds [12]
6-Methoxy-1-methyl-N 6-methyl-β-carboline [= 6-Methoxy-1,2-dimethyl-β-carboline]

Desmodium pulchellum

Seeds (ripe) of mature plant [26% of 0.02% Total alkaloid] (~ 0.005% by dry weight) [15]
6-Methoxy-1-methyl-N 6-methyl-β-carbolinium cation [= 6-Methoxy-1,2-dimethyl-β-carbolinium cation]

Desmodium pulchellum

Root of young seedling {Trace} [15]
Fruit (green) of mature plant [2% of 0.01% Total alkaloid] (~ < 0.001% by dry weight) [15]
Seeds (ripe) of mature plant [8% of 0.02% Total alkaloid] (~ 0.002% by dry weight) [15]

Unidentified alkaloids reported:
Unidentified β-phenethylamines
Desmodium gangeticum

Roots. 0.18 gm. from 1.6 kg [5]
Desmodium gyrans

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Desmodium alkaloid summary

Roots traces [14]

**Unidentified quaternary β-phenethylamine**
*Desmodium triflorum*
Minor in roots. (amount not given) [13]

**Four quaternary β-phenethylamines and tetrahydroisoquinolines.**
*Desmodium tiliaefolium*
Roots (Amount not given) [11]

**Uncharacterized indole-3-alkylamines**
*Desmodium gyrostrom*
Leaves (27 mg. from 2 kg) [14]
Roots 2 Minor alkaloids. [14]

**Unidentified indole bases**
*Desmodium gangeticum*
Seeds [6]

**Unidentified quaternary indole bases**
*Desmodium gangeticum*
Green Plant (Stem and Leaf) [6]

**Unidentified β-carboline**
*Desmodium gangeticum*
Seeds [6]

*Desmodium gyrostrom*
Leaves (26 mg. from 2 kg) [14]

**Unidentified bases**
*Desmodium gangeticum*
Water soluble unidentified bases. Unspecified plant parts. [12]

*Desmodium pulchellum*
Stem and leaf of mature plant [0.042% by dry weight; 3% of 1.4% Total alkaloid] [15]
Root of young seedling also mature plant [Traces in both] [15]
Fruit (green) of mature plant [< 0.001% by dry weight; 6% of 0.01% Total alkaloid] [15]
Seeds (ripe) of mature plant [~ 0.006% by dry weight; 28% of 0.02% Total alkaloid] [15]

*Desmodium triflorum*
Leaf, Stems, Roots [16]

**Unidentified quaternary base**
*Desmodium cephalotes*
Root (22 mg. from 3.2 kg) [7]

**Other simple bases:**

**Betaine**
*Desmodium tiliaefolium*
Roots (6 mg. from 2.3 kg.) (also present in stems in lower concentrations) [11]

*Desmodium triflorum*
Leaf [16]
Stems [16]
Roots [16]
Minor in Root and Leaf. (Amounts not given) [13]

**Choline**
*Desmodium cephalotes*
Stem-Roots (57 mg. from 3.2 kg) [7]
A couple of Nonalkaloidal Substances and some Phospholipids:

**Glycoside** (New - the 1-Glucosylrhamnoside of physcion)
*Desmodium pulchellum*
Identified in seeds. [19]

**A Lactone** \(\text{C}_{16}\text{H}_{30}\text{O}_{2}\)
*Desmodium gangeticum*
Roots. [1]

**Phosphatidyl ethanolamine**
*Desmodium gangeticum*
Seeds [20]

**Phosphatidyl inositol**
*Desmodium gangeticum*
Seeds [20]

**Phosphatidyl serine**
*Desmodium gangeticum*
Seeds [20]

**Sphingomyelin**
*Desmodium gangeticum*
Seeds [20]

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17. Ghosal et al. 1972e
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Prema, P. (1968) M.D. Thesis, University of Kerala Trivandrum, India. "Pharmacological studies of Desmodium gangeticum DC." [ILS was unable to obtain any response to their requests concerning this item.]


of Upper East Godavari District (Andhra Pradesh) and Need for Establishment of Medicinal Farm.”

A Desmodium species (D. incanum?) found growing on the slopes of Haleakala, Maui, Hawai'i
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“More than you need to know?”

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