SENNAL EAVES

Senna leaf consists of the dried leaflets of Alexandrian or Khartoum senna, Cassia senna L. (C.acutifolia) or Tinnevelly senna, Indian senna (C. angustifola) or mixture of both F. Leguminosae.

Alexandrian or Khartoum and Indian senna are called genuine senna

**Alexanderian senna:**

The leaves are compound paripinnate. The leaflets are entire, frequently broken very shortly petiolate.

1- Shape: lanceolate to ovate lanceolate, 2-4cm long, 5-10mm width (broad).
2- Colour: pale greyish- green.
3- Apex acute.
4- Asymmetric
5- Margin: entire and slightly revolute.
6- Texture: thin and brittle, both surfaces are slightly hairy.
7- The venation: pinnate reticulate, the veins being distinct on the lower surface.

**Tinnevelly or Indian senna:**

The leaflets are usually unbroken up to 6cm long, 6-15mm broad differs from Alexandrian senna in the following:

1- Yellowish green in colour.
2- Less asymmetric.
3- Hairy and show some depressed lines on the surface.

**Senna leaves have a faint characteristic odour and slightly bitter acrid mucilaginous taste.**

**Micoscopical characters:**

1- The leaflets are isobilateral.
2- The epidermal cells are polygonal with straight anticlinial walls, numerous stomata occur on both surfaces of paracytic type. Hair of non glandular type, few present especially on the lower surface near the veins. They are unicellular, thick walled with warty cuticle and frequently curved near the base.
3- Mesophyll: show a single layer of palisade abutting on each epidermis except in the midrib region where only the upper palisade layer is continuous. The cells of the lower palisade have heavy anticlinal wall and shorter than those of the upper. The spongy tissue containing cluster crystals of calcium oxalate.

4- The midrib: shows a crescent shaped vascular bundle, accompanied by arc of pericyclic fibres below and a compact mass of fibres above with the cells containing prismatic crystals of calcium oxalate abutting on these group of fibres forming crystal sheath. The pericyclic fibres are lignified with blunt ends.

**Powdered senna:**

1- Numerous green fragments some show epidermal cell.

2- Stomata of paracytic type, warty hairs, cicatrix with radiating epidermal cells.

3- Fragments of bundles of lignified pericyclic fibres accompanied by crystal sheath.

4- Isolated unicellular warty hairs

5- Fragments of lignified vessels.

6- Cluster crystals of calcium oxalate.

7- Starch granules.

8- Fragments showing isobilateral structure.

**Active constituents:**

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<tbody>
<tr>
<td>Sennoside A</td>
<td>COOH</td>
<td>Rhein dianthrone Trans</td>
</tr>
<tr>
<td>Sennoside B</td>
<td>COOH</td>
<td>Rhein dianthrone Meso</td>
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<tr>
<td>Sinnoside C</td>
<td>CH₂OH</td>
<td>Aloe emodin dianthrone Trans</td>
</tr>
<tr>
<td>Sinnoside D</td>
<td>CH₂OH</td>
<td>Aloe emodin dianthrone Meso</td>
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**Identification:**

1- To 25mg powdered senna add 50ml water and 2ml HCl, heat in water bath for 15 min, allow to cool and shake with 40ml of ether. Dry the ether over anhydrous sodium sulphate, evaporate to dryness, cool and add 5ml of 6M ammonia to the residue. Yellow to orange colour develops.

2- Thin layer chromatography

3- Modified borntrager’s test: 200mg of powdered senna with 4ml of alcohol potassium hydroxide for 5' in t.t. dilute with 4ml of water and filter, acidify with HCl. Cool and shake well with 5ml of ether, separate the ether into test tube and shake
with 2ml of dilute solution of ammonium hydroxide. Rose red to intense red colour is produced in the aqueous layer.

**Foreign matter:**

Not more than 3% of foreign organ and not more than 1% foreign elements. It dose not contains any hairy leaves (*Cassia auriculata*),

**The absence of which is demonstrated in the following manner:**

1- Place leaf powdered on a slide, add 0.05ml of 80% w/v solution of sulphuric acid. No carmine red colour appears.

2- Shake 200mg of powder with 3ml of alcohol for 3', filter, add 200mg charcoal, shake and filter, add equal volume of 33% solution of sulphuric acid. No red colour develops either in cold or after heating for 1' on water bath.

**Adulteration:**

**A- Cassia auriculata** (*Pathe senna*): leaves can be distinguished from genuine sennas by:

1- Thick walled unicellular trichomes about three times as long as genuine senna.

2- The upper palisade consists of two layers of cells.

3- The leaves give with 80% sulphuric acid a red colour.

4- Absence of anthraquinone derivatives.

**B- Bombay senna** (Arabian senna):

1- Its leave resemble Indian senna leaves but they are more elongated, narrower, brownish green colour.

2- Can be distinguishing from other senna by vein islet number.

**A- Dog senna** (upper region of Egypt),

1- Obovate,

2- Presence of pappilosed in lower epidermis cell.

**B-Argel leave: not Cassia species.**

1- Non glandular hair, multi-cellular 2-3 cells.
Test for purity of genuine senna:

1- Senna leaves should contain not more than 8% of senna stalk and not more than 2% of senna pods

2- No crimson colour with 80% sulphuric acid (no pathe senna).

3- No multicellular hair (no argel).

4- No abundant starch granules or scelerides, no stalk of senna.

5- No papillosed epidermal cell (no dog senna)

Uses:

Laxative, purgative.