Both Stigma Croci and Carthami Flos are Chinese Materia Medica (CMM) listed in the Chinese Pharmacopoeia (2015 Edition). In addition, Stigma Croci is included in Schedule 2 of the Chinese Medicine Ordinance. According to the “Modern Chinese Materia Medica” and “Zhong hua ben cao”, Stigma Croci originates from Spain and is also known as “Fan hong hua”. Currently, the major production areas are situated in Spain and Iran. On the other hand, the growing of Carthami Flos was introduced into China back in the Han Dynasty, with Xinjiang currently having the largest production. According to the Chinese Pharmacopoeia, Stigma Croci can be used to activate blood and to resolve stasis, to cool blood and detoxify, and to relieve depression and tranquilize. On the other hand, Carthami Flos can activate blood to unblock the meridian, and to dissipate stasis to relieve pain. Although the names of these two CMM are similar, the price difference is significant. Moreover, the medicinal effects are not identical. They should be used accordingly.

Note:

* Stigma Croci
  is the dried stigma of
  * Crocus sativus L.
  in the family Iridaceae

* Carthami Flos
  is the dried flower of
  * Carthamus tinctorius L.
  in the family Compositae
**Key identification features**

**Macroscopic features of Stigma Croci**

- **Linear, dark red**

- The upper part of stigma is relatively broad and slightly flat, with irregular-dentate margin at the apex.

- Some with remnant of yellow style; hence, showing the style is 3-branched.

- When soaked in water, orange-yellow pigment can be seen descending downward in a straight line with relatively slow diffusion.

- **Fragile, easily broken**

**Micro-morphological features**

A1: Curly, with irregular-dentate margin at the apex.

A2: Tubular or tubercular protuberances are sometimes visible (→) on the surface of the margin at the apex, frequently adhered with pollen grains (→).

B: Slightly rough surface, sometimes adhered with pollen grains (→).

(Upper part of stigma) 0.5 mm (Lower part of stigma) 0.5 mm
Macroscopic features of Carthami Flos

◆ Tubular flowers without the ovaries

Slender stigma in yellow or yellowish-brown, frequently extend beyond anther tube, with slightly furcate apex

5 stamens. Yellow or yellowish-white anthers fused into a tube

Orange-red or red corolla 5-lobed at the apex. Linear lobe

Slender corolla tube

When soaked in water, orange-yellow pigment diffuses relatively faster and not descending downward in a straight line

Micro-morphological features

A1: Bifid apex
A2: With sparse non-glandular hair-like protuberances (→) on the surface, frequently adhered with pollen grains (→)

(Upper part of stigma) 200 μm

B: With dense non-glandular hair-like protuberances (→), frequently adhered with pollen grains (→)

(Lower part of stigma) 200 μm
## Microscopic feature comparison of Stigma Croci and Carthami Flos powder

<table>
<thead>
<tr>
<th></th>
<th><strong>Stigma Croci</strong></th>
<th><strong>Carthami Flos</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Secretory canal</strong></td>
<td>Absent</td>
<td>Tubular, filled with yellowish-brown or reddish-brown secretions</td>
</tr>
<tr>
<td><strong>Pollen grain</strong></td>
<td>Barely found, sub-spherical, large. Exine with fine spine-like protuberances</td>
<td>Elliptical or spherical, with 3 apertures. Exine with spine-like protuberances</td>
</tr>
<tr>
<td><strong>Epidermal cell of stigma</strong></td>
<td><em>(Epidermal cell)</em>&lt;br&gt;Long strip-shaped in surface view, some with papillary protruded outer walls. Epidermal cell of the apex barely found, with tubular protruded outer walls</td>
<td><em>(Epidermal cell of the apex)</em>&lt;br&gt;Differentiated into unicellular non-glandular hair-like</td>
</tr>
</tbody>
</table>

50 µm
### Summary

Major differences in the features between Stigma Croci and Carthami Flos:

<table>
<thead>
<tr>
<th>Macroscopic and micro-morphological features</th>
<th>Stigma Croci</th>
<th>Carthami Flos</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>Linear stigmas</td>
<td>Tubular flowers without the ovaries</td>
</tr>
<tr>
<td><strong>Water test</strong></td>
<td>Orange-yellow pigment can be seen descending downward in a straight line with relatively slow diffusion</td>
<td>Orange-yellow pigment diffuses relatively faster and not descending downward in a straight line</td>
</tr>
<tr>
<td><strong>Stigma</strong></td>
<td>With irregular-dentate margin at the apex</td>
<td>Bifid apex</td>
</tr>
<tr>
<td><strong>Secretory canal</strong></td>
<td>Absent</td>
<td>Present</td>
</tr>
<tr>
<td><strong>Pollen grain</strong></td>
<td>Barely found, relatively large</td>
<td>Relatively small</td>
</tr>
<tr>
<td><strong>Epidermal cell of stigma</strong></td>
<td>Some with papillary protruded outer walls, epidermal cell of the apex with tubular protruded outer walls</td>
<td>Differentiated into unicellular non-glandular hair-like</td>
</tr>
</tbody>
</table>

For more information, please refer to the Hong Kong Chinese Materia Medica Standards website:

- [Croci Stigma - Hong Kong Chinese Materia Medica Standards (Volume 5)]
- [Carthami Flos - Hong Kong Chinese Materia Medica Standards (Volume 6)]