Technical Bulletin on
*Maytenus emarginata* (Kankera)

A High Value Medicinal Plant Species
**Name** : *Maytenus emarginata*  
(Willd.) Ding Hou  
**Common Name** : Kankera (Hindi),  
Vikankata, Sudhavridsha (Sanskrit);  
Thorny staff tree (English).  

**Botanical Classification** :  
Kingdom : Plantae  
Phylum : Magnoliophyta  
Class : Magnoliopsida  
Order : Celastrales  
Family : Celastraceae  
Genus : Maytenus  

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**Introduction** :  
*Maytenus emarginata* is a small evergreen, dioecious, hardy compact forest/fodder tree having great ecological importance. This plant is a valuable biomass producer in the Aravallis and the Indian desert. It tolerates various types of stresses of the desert. This evergreen tree holds an exceptional status among the diverse flora because of its enormous medicinal value.

**A Heritage Tree** :  
It is sacred plant for environment – friendly Bishnoi community. It is believed that lord Jambheshwar (Jambhoji) has realization under tree of *Maytenus emarginata*.

**Threat to the species** :  
During recent past the ruthless cuttings of the species has resulted in disappearance of this treasured germ plasm from the arid and semi-arid region. In some areas this plant has been replaced by *Acacia tortilis*.

**Distribution** :  
The species is globally distributed in Paleotropic biogeographic region. Within India, it is common in dry scrub forests areas, particularly on poor soils in Central and Western peninsular India. This drought and heat resistant biomass producer is found in Rajasthan, Gujarat, Delhi, Punjab, Uttar Pradesh, Madhya Pradesh, Maharashtra, Bihar, Tamil Nadu.
Description:
A small to medium size compact tree, 3-5 meter high. Young branches purple, often spiny, with leaves and flowers on the spines. Leaves 4-7 x 2-3.5 cm, thick, coriaceous, much variable in size and shape, elliptic or obovate, usually rounded at apex, entire or crenulated, tapering at base, secondary nerves 6-10, petiole 3-9 mm long, usually purple. Flowers prolific, in di or trichotomous, axillary cymes or fascicles, bisexual or sometimes functionally unisexual, white or cream colored 5-7 mm in diameter. Male flower: stamens slightly shorter than petals, stigmas absent, disc green, 5-lobed. Female flower: Staminodes shorter than stamens of male flower, ovary 3-locular, green, style as long as ovary.

Fruit is a Capsule, berry; 6-7 mm in diam., purple or nearly black when ripe, coriaceous, usually 2 valved. Seeds 1-2, rarely 3, with a thin aril. New flowers & fruits: Oct – February. Some plants fruit earlier when others are only in flowering stages and the two types give entirely a different look in profuse. Bark is pale brown, smooth & cracked. Tap root with cream yellow color.

Uses:
The plant is of socio-cultural, ecological & economic importance. It provides fodder, fuel wood, timber and is of great medicinal importance.

Medicinal Uses:
- Traditionally species of Maytenus has been used for fever, asthama, rheumatism and gastrointestinal disorders worldwide.
- Plant extracts of the Celastraceae have been used for centuries throughout South America and China as insect repellents and insecticides in traditional agriculture and also for the treatment of a plethora of medical ailments from stomach complaints and fever to rheumatoid arthritis and cancer.
- Maytenus emarginata and its potential use as a drug source for different tumor cells.
- The result of the present study showed that the extract of Maytenus emarginata root, which contain highest amount of phenolic compounds, exhibited the greatest antioxidant activity. The high scavenging property of Maytenus emarginata root may be due to hydroxyl groups existing in the phenolic compounds chemical structure that can provide the necessary component as a radical scavenger. The results in this investigation have also shown that medicinal plants may be good source of natural antioxidants.
Plant Parts used for Medicine:

- **Root**: Used in gastrointestinal troubles, especially dysentery.
- **Stem**: Tender shoots of the plant help for mouth ulcer.
- **Bark**: Is ground to a paste and applied with mustard oil to kill lice in the hair.
- **Leaf**: Pulverized leaves of *Maytenus emarginata* are given in milk to children as a vermifuge. A decoction of the leafy twigs is used as a mouthwash to relieve toothache. Ash of leaves used burnt and mixed with ghee to form an ointment used to heal sores. The tender leaves are chewed raw in the treatment of jaundice.
- **Fruit**: The fruits are used in medicines to purify blood

Experimental Trial at Seed Testing Lab, Grass Farm Nursery, Jaipur:

Hormonal treatment of seeds is given to enhance the seed germination percentage. A study of effect of Cytokinins & other chemicals of different concentrations on the seed germination of *Maytenus emarginata* was carried out at Seed testing lab, Grass Farm Nursery, Jaipur by Research officer (Seed lab.). The Table given below indicates the results of pre-soaking treatment given to seeds for different time duration followed by their drying in shade and testing germination % for each sample size.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Treatment</th>
<th>Pre-soaking period and germination %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>6 hour</td>
</tr>
<tr>
<td>1</td>
<td>Kinetin 0.1 percent</td>
<td>52</td>
</tr>
<tr>
<td>2</td>
<td>Kinetin 0.5 percent</td>
<td>36</td>
</tr>
<tr>
<td>3</td>
<td>Kinetin 1.0 percent</td>
<td>41</td>
</tr>
<tr>
<td>4</td>
<td>Potassium Nitrate 0.1 percent</td>
<td>58</td>
</tr>
<tr>
<td>5</td>
<td>Potassium Nitrate 0.5 percent</td>
<td>51</td>
</tr>
<tr>
<td>6</td>
<td>Potassium Nitrate 1.0 percent</td>
<td>48</td>
</tr>
<tr>
<td>7</td>
<td>Thiourea 0.1 percent</td>
<td>45</td>
</tr>
<tr>
<td>8</td>
<td>Thiourea 0.5 percent</td>
<td>60</td>
</tr>
<tr>
<td>9</td>
<td>Thiourea 1.0 percent</td>
<td>54</td>
</tr>
<tr>
<td>10</td>
<td>Water</td>
<td>55</td>
</tr>
<tr>
<td>11</td>
<td>Without any treatment</td>
<td>51</td>
</tr>
</tbody>
</table>

Conclusion:

Small seed size of of *Maytenus emarginata* gives best germination % with six hour presoaking. Maximum germination % was found when seeds were soaked in 0.5 percent solution of Thiourea for six hour (60 %). Seeds treated with water for six hour is also giving 55 % germination result. **Therefore it is recommended that the seeds of Maytenus emarginata should be treated with water for six hour duration for getting optimum germination results in field condition and nursery practices.**

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