Mini Review

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# Vegetative propagation strategy of *plectranthus amboinicus* (Lour) spreng in herbal garden

## Abstract

Background: The plant *Plectranthus amboinicus* (Lour) Spreng. is herbaceous, medium heighted thick leafy plant of family Lamiaceae. It is sensitive to environmental variables needed for proper care. The stem cutting of the plant after maturation cut down easily by external factors. These stem cuttings are marked as a main source of its rapid propagation like their parental plants in favourable environmental condition.

Results: Root/Shoot system develop in nodular part of the stem and further it converts in to new plant with presence of aroma. Stem cutting 5-10 cm with 2-4 nodes were selected and carefully cut out from mother plant and are applied for regeneration of the plant. Fifty poly bags with soil, sand, manure were prepared for developing the new plants using stem cuttings.

Conclusion: Every stage of the propagation study was monitored and required facilities were provided to the developing plants in poly bags separately. *Plectranthus amboinicus* (Lour) Spreng propagation experimented in Herbal garden aimed for its rapid propagation and for ex-situ conservation. Related activities which support the above strategy were discussed more.

**Keywords:** plectranthus amboinicus (lour) spreng, stem cutting, plant propagation, herbal garden

Volume 5 Issue 4 - 2016

Devendra Kumar Patel

Department of Rural Technology, Guru Ghasidas Vishwavidyalaya, (A Central University), India

**Correspondence:** Devendra Kumar Patel, Department of Rural Technology, Guru Ghasidas Vishwavidyalaya, (A Central University), Bilaspur, Chhattisgarh, India, Email dplantscience@yahoo.co.in

**Received:** July 30, 2016 | **Published:** December 19, 2016

## Background

Plants are unique segments for development and designing of the biodiversity. Associations of the plants of different habit, habitat and uses etc are leading to develop their population in nature. Finally these are participating role in formation of plant community which is characterized by their number, density and abundance etc. In ecological concern the plant diversity are affected by environmental variations as well as the genes of different plant species individually. Seed production is a unique method for production of new individuals of the plants. Its number and germination capacity is marked for the better growth and development. Seeds are adapted to disperse in nature by several methods. Seed germination and early plant development is a prime stage for creation of plant diversity. In this method only the plants are capable to propagate using seeds. Many of the plant species among large plant diversity are not capable to do so and are significantly developed using their vegetative plant parts referred as vegetative mode of plant propagation. Different methods of the plant propagation and useful parts of the plants are leading factors for determination of the presence of the particular plant species in nature. Current study focus and aimed for rapid vegetative propagation of *Plectranthus amboinicus* (Lour) Spreng in Herbal garden not only for making their several copies but also for their ex-situ conservation in Herbal garden established for the same targets.

Capability for new individual development of varied plant species are resulted after the application of varied plant sources/parts/seeds in relation to their local climates. Pattern of plant life, proper harvesting, uses of suitable plant parts etc are leading factors for developing plant diversity. It is also supporting the plants conservation for sustainable development of natural sources. Devi and Periyanayagam[1] focused *in vitro* anti inflammatory activity of *Plectranthus amboinicus* (Lour) Spreng by hrbc membrane stabilization. Buznego and Perez[2] noticed antiepileptic effect of *Plectranthus amboinicus* (Lour.) Spreng. Bhatt and Negi[3] recorded antioxidant and antibacterial activities in the leaf extracts of Indian borage (*Plectranthus ambionicus*). Erny et al.,[4] recorded on antimicrobial activity and bioactive evaluation of *Plectranthus amboinicus* essential oil.

Murthy et al.,[5] studied on fungitoxic activity of Indian borage (*Plectranthus amboinicus*) volatiles. Gurgel et al.,[6] experimented in vivo study of the anti-inflammatory and antitumor activities of leaves of *Plectranthus amboinicus* (Lour.) Spreng (Lamiaceae). Kaliappan et al.,[7] recorded on pharmacognostical Studies on The Leaves of *Plectranthus amboinicus* (Lour) Spreng. Lukhoba et al.,[8] noticed on *Plectranthus:* A review of ethno botanical uses. Nimala et al.,[9] experimented *in vitro* anti leptospiral activity of *Plectranthus amboinicus* (Lour) spreng. Perez et al.,[10] recorded on neuro Pharmacological profile of *Plectranthus amboinicus* (Lour.) Spreng (Indian borage). Patel et al.,[11] studied diuretic activity of leaves of *Plectranthus amboinicus* (Lour) Spreng in male albino rats. Patel et al.,[12] found antioxidant potential of leaves of *Plectranthus bamboinicus*(Lour) Spreng. Nirmala et al.,[13] studied on pharmacognostical studies on the leaves of *Plectranthus amboinicus* (Lour) Spreng. Rao et al.,[14] studied leaf oil of *Coleus amboinicus* (Lour), The *in vitro* antimicrobial studies.

Poppy et al.,[15] studied antioxidant and Cytotoxic Activities of *Plectranthus amboinicus* (Lour.) Spreng. Extracts. Preeja et al.,[16] noticed pharmacognostical standardization and toxicity profile of the methanolic leaf extract of *Plectranthus amboinicus Lour) Spreng.* Roshan et al.,[17] analyzed Phyto-Physicochemical investigation of leaves *Plectranthus amboinicus* (Lour.) Spreng. Uma et al.,[18] Determined Bioactive Components of *Plectranthus amboinicus*

Lour by GC–MS Analysis. Sevanan et al.,[19] focused on variability in growth, nutrition and phytochemical constituents of *Plectranthus amboinicus*(Lour) Spreng. As influenced by indigenous arbuscular mycorrhizal fungi,

## Methods

*Plectranthus amboinicus* (Lour) Spreng is a medium heighted medicinal plant which includes aroma in aerial part of the plant. The plant is well performing itself in term of vegetative propagation by following their stem cuttings. Mature plants stems are easily cut from mother plant naturally. It stem cuttings 5-10 cm long were selected, removed from their parental plants and are grown in the ready soil/ beds in Herbal garden following fulfillment of their requirements. The plant is capable to tolerant itself by the effect of high temperature. During high temperature its colour changes from green to yellowish-green and again when plant gets favourable environmental conditions colour changes to green.

*Plectranthus amboinicus* (Lour) Spreng stem cuttings propagation also done in prepared poly bags filled with soil, sand and manure mixture. With addition of required water time to time during its development in to new individuals of the same plant as their parental ones. Above practice was made not only for its multiplication but also for their ex-situ conservation in Herbal garden.

## Results and discussion

It is a Medicinal as well as aromatic plant with thick fleshy leaves. It required moderate range of water supply for their better growth and development. Tap root system is branched and not much deep in soil. Stems are cylindrical, branched, small hairs present, weak. After maturation of stem it easily breaks from mother plant. These are fall down on soil surface and having potential to develop in to new root and shoot system from its nodular part which further changes in to a new individuals like their parental ones. Leaves are petiolate, thick, hairy and green with dentate margin. The plant includes efficient capability to regenerate using their mature stem cutting. Each one of the stem cutting with 2-4 nodes/buds around 10cm length are performing better as a source of development of new plants as their mother plant following vegetative mode of propagation (Figure 1).

**Citation:** Patel DK. Vegetative propagation strategy of plectranthus amboinicus (Lour) spreng in herbal garden. *Adv Plants Agric Res.* 2016;5(4):603–609. DOI: 10.15406/apar.2016.05.00190

0 Day of experiment.

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Changes after 10 days.

Changes after 20 days.

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Changes after 30 days.

**Citation:** Patel DK. Vegetative propagation strategy of plectranthus amboinicus (Lour) spreng in herbal garden. *Adv Plants Agric Res.* 2016;5(4):603–609. DOI: 10.15406/apar.2016.05.00190

Plantation in prepared beds.

**Figure 1** Changes in experiment.

## Acknowledgements

None.

## Conflict of interest

The author declares no conflict of interest.

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