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Chinese Potato: A Potential Minor Tuber Crop

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Abstract

Chinese Potato (*Plectranthus rotundifolius* Poir.) Spreng. belongs to *Lamiaceae* family is native to tropical Africa and grown in some parts of India in small scale, particularly in Kerala and Tamil Nadu for its edible tuber. It is also widely cultivated as an ornamental plant. Chinese potato cultivated for edible purposes in southern part of India (Kerala and Tamil Nadu) and globally in South Africa and South-Asian countries. Other than immense nutritional properties, this plant has potential for treatment of stomach disorders, vomiting, diarrhea, mouth and throat infection, abdominal pain, wounds, burns, insect bites and other sensory disorders. Chinese potato is an important minor tuber crop and it can be incorporated for agro biodiversity purposes in farming system for crop diversification.

Introduction

Tuber crops are the third important food crops after cereals and pulses. These crops provide food to the one-fifth of the world population in form of either stable food or subsidiary food. Tuber crops are rich source of carbohydrates (starchy roots), have multiple uses, most notably as regular food crops, cash crops, and are increasingly used as livestock feed, raw material for industrial purposes, and also processed for human consumption. The tropical and sub-tropical major tuber crops includes, *Manihot esculentum* (cassava), *Ipomoea batatas* (sweet potato), *Dioscorea* spp. (yam species), Aroids and some minor tuber crops include *Amorphophallus* spp. (Elephant food yam), wild *Dioscorea* species, Coleus, Costus, Typhonium, Tacca, Arrowroot, Canna, Chinese potato (Figure 1), Cocoyam, Ceropogia, Alocasia, Winged bean, Yam bean, Swamp taro, Giant taro and different starchy curcuma species. Tuber crops play a major part in daily diet, accounting for over 50% of the total staple. Besides their nutritional attributes these crops hold strong economic potential and could be financially rewarding to the farm economy. So Chinese potato as a minor crop rapidly occupying southern part of Indian market, which can be included in agricultural system (Chauhan *et al.*, 2020).

Systematic Position

Kingdom: Plantae (Plants)
Division: *Magnoliophyta*
Class: *Magnoliopsida*
Order: *Lamiales*
Family: *Lamiaceae*
Genus: *Plectranthus* L'Hér. (plectranthus)
Species: *rotundifolius* (Poir.) Spreng.

Synonyms: *Coleus rotundifolius* (Poir.) A.Chev. & Perrot; *Plectranthus tuberosus* Blume; *Solenostemon rotundifolius* (Poir.) J.K.Morton

Name in Other Languages:

English: Hausa potato, Madagascar potato, Chinese-potato, Salaga-potato, Sudan-potato, Country-potato, Fra-fra-potato, Coleus, coleus potato, Kafir potato, Zulu potato

Hindi: Kukra, koorka

Kannada: Saṃbrāni, sambrali

Malayalam: kūrkka, kūrkka, koorka, koorkka

Tamil: Cṛukiḷaṅku, sirukizhangu



Figure 1: Chinese potato plant

Habitat

Plectranthus rotundifolius (Poir.) Spreng. is commonly known as native or country potato in Africa, whereas called Chinese potato in India. This plant is a perennial herbaceous plant of the mint family (*Lamiaceae*) native to tropical Africa. Now it is cultivated primarily in West Africa as well as more recently in parts of Asia, like India, Sri Lanka, Malaysia, China, South Korea and Indonesia.

Morphology

Chinese Potatoes is an aromatic, semi-succulent perennial herbaceous plant which can't tolerate water logging and needed a well-drained sandy loam. It grows prostrately with succulent stem reaching up to 15-30 cm in length, which capable of forming tubers in clusters around the base of the stem. The tubers are small and dark-brown. Tubers are egg shaped and formed in clusters of 3 to 7 at the base of the stem. The stem is ascending, quadrangular, pubescent and aromatic. The leaves are thick, juicy, faintly aromatic, succulent, opposite in position. The petiole is puberulous, leaf blade ovate to semicircular with serrate margin. The blade is ovate to sub-orbicular and wedge-

shaped at the base. The inflorescence is verticillaster type grows as a terminal false spike, with distant whorls of 4-6 flowers. The sepal is bell-shaped with small bracts, glandular-hairy and 5-toothed. The upper tooth is highly fused, oblong, pointed; very short median teeth with rounded tip while the lower teeth is highly fused that forms an almost flat tip but ends abruptly in 2 widely apart acute tips. The flower is generally tubular and bilipped, light to dark violet in colour, velvety and gland-dotted. The upper lip is very short and with 4-lobed while the lower lip is boat-shaped. Generally Flowering occurs between February and August. Normally the crop reaches maturity in 5-8 months (Figure 2). Fruits are consisting of 4 nutlets (Aculey et al., 2011; Chauhan et al., 2022).



Figure 2: A (flower of Chinese potato); B (chinese potato field); C (pot culture of chinese potato); D (chinese potato)

Phytochemical Compounds of Chinese Potato

Many species of *Plectranthus* have been found to possess essential oils, diterpenoids, phenolics, flavonoids which can act as antimicrobial agents. Phytochemicals present in the methanolic extracts of *P. ambonicus* by high performance liquid chromatography and reported the occurrence of polyphenols rosmarinic acid, rutin, caffeic acid, gallic acid, p-caumaric acid, and quercetin. Probably, the biological activities in the tuber extract. Different studies revealed that the flavonoids were the major components producing the antioxidant activity, since the flavonoid content present in the methanol extract was higher than in the other extracts (Jayapal et al., 2015; Murthy et al., 2018).

Storage of Chinese Potatoes

Chinese Potatoes are hard to store. So traditionally the tubers are stored in the ground under a tree where it is cooler than in the open. When stored in this way traditionally under hot conditions the special taste of Chinese

potato usually lasts for two months only, after which the tubers become bland and are no longer considered a delicacy. Chinese potato is also packed in bags or baskets stuffed with straw, but if these are kept under warm conditions the tubers will soon shrivel and are no longer edible. To keep the tubers longer, people put them in pots sealed with cow dung. The small tubers needed for the next planting season are stored in this way. In cooler conditions, such as in highland regions or in South Africa, storage is easier.

Traditional Knowledge of Chinese Potato

- Leaves are usually used in traditional medicine for purposes like the treatment of dysentery.
- The plant is also used to treat blood in the urine as well as eye disorders.
- They are also used against dysentery and certain eye diseases in Africa.
- Chinese potato is helpful in treating conditions like vomiting, diarrhea, mouth and throat infection, abdominal pain, wounds, burns, insect bites and other sensory disorders.
- In ethno botany, preparation of boiled leaves of Chinese potato is used to treat blood in urine and eye disorders and it can also improve immunity and body's defense mechanism.

Conclusion

Chinese potato is an important minor tuber crop cultivated in tropical and sub-tropical regions for its edible tubers. It has immense potential in terms of micro nutrients, phytochemicals and others phenolic

compounds having good antioxidant properties. It can be grown in wide range agro-climatic conditions and having potential for crop diversification in different farming systems.

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