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Survey of succulent plants from various regions of Maharashtra

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Abstract

Survey of succulent plants in Maharashtra region was done by collecting the information from the experienced medicinal practitioners. In present investigation it is observed about 4 Families, 5 Genus and 5 Species were identified with relevant information and documented in this paper with regard to their Botanical Name, family, Habitat, flowering Fruiting session and medicinal properties like anti-inflammatory, antioxidant, antipyretic, anti-diabetic, anticancer etc.

Keywords: Succulent plants, family, genus, antipyretic

Introduction

Drought and increased temperature of the Earth's surface associated with climate change are likely to pose significant social and economic challenges ^[1, 2]. Understanding the impacts of these changes on primary producers such as plants, and their value as natural capital, will be crucial for designing measures to reduce the negative consequences of climate perturbations. A multitude of adaptations to heat and water stress have evolved in plants to regulate metabolism and reproduction in water-limiting environments. The succulent plants also known as succulents or sometimes fat plants having some parts that are more than normally thickened and fleshy, usually to retain water in arid climates or soil conditions. The succulents comes from the latin word *sucus*, meaning juice or sap succulent plants may store water in various structures, such as leaves and stems. The succulent syndrome is considered to be one of the most remarkable examples of convergent evolution across the plant kingdom. Common to all succulents is the presence of large cells for water storage. However, cellular succulence can occur in any vegetative plant organ, with the level of succulence in roots, stems, and leaves being subject to a certain degree of evolutionary coordination ^[2-5]. Furthermore, cellular succulence scales up to morphological succulence according to various anatomical schemes that confer contrasting functional characteristics. Some definitions also include roots so that geophytes that survive unfavourable periods by dying back to underground storage organs may be regarded as succulents. In horticultural use the term succulent is often used in a way which excludes plants that botanists would regards as succulents such as cacti. Succulents are often grown as ornamental plants because of their striking and unusual appearance. Nearly all cacti are succulents but not all succulents are cacti ^[6-10]. A general definition of succulents is that they are drought resistance plants in which the leaves stem of roots have become more than usually fleshy by the development of water storing tissue. Plants adapted to living in dry environments such as succulents, since there are other ways of adapting to storage of water e.g. by developing small leaves which may roll up or having leathery rather succulent leaves. Succulents are the camels of the plants world. They take in water and store it in their fleshy interiors, allowing them to go long periods of time without additional life giving liquid. The study of succulent plants was also been worked upon for their ethanobotanical significance and some members belonging to it was found to be of great significance in Ayurveda and Medicinal Botany ^[11-14].

Materials and Methods

An extensive and intensive survey for rare succulent plants species was carried out from different parts of the Maharashtra during 2017- 2018. Detailed survey of plants species was carried out in various localities of Maharashtra. Plants mostly collected from rocky, barren Places. The method of plant collection and their identification was done through methods used

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Earlier by Chavan [3]. It was carried out for survey of succulent plants from the study area. The collected specimens were identified with the help of available literature, matching with herbarium and relevant standard books [7, 14].

Results

The different succulent plants have different habitat,

flowering and fruiting season. The *Agave americana* L. Shrub belongs to family Agavaceae having antiseptic medicinal use where as *Agave desmetriana* Baker belongs to same family but causes stomach inflammation. *Opuntia elatior* Mill. and *Cissus quadrangularis* L. belongs to different family but have antioxidant properties.

Table 1: Plant of Botanical, Family Name, Habit, Flowering and Fruiting Season,

Sr. No	Name of Plant	Family	Habit	Flowering and Fruiting Season Plant part	Medicinal use
1	<i>Agave americana</i> L. Shrub	Agavaceae	Spring	Leaf, Root	Antiseptic
2	<i>Agave desmetriana</i> Baker	Agavaceae	Rosette	Rainy-winter	Stomach inflammation
3	<i>Opuntia elatior</i> Mill.	Cactaceae	Shrub	Winter	Antioxidant
4	<i>Huernia zebrina</i> L.	Asclepidaceae	Herb	winter	Antiseptic
5	<i>Cissus quadrangularis</i> L.	Vitaceae	Shrub Spring	Autumn	Antioxidant
6	<i>Haworthia arachnoidea</i>	Asphodelaceae	Shrub	winter	-

Discussion

In the survey of succulent plants from Maharashtra we observed about 5 Families, 10 Genus and 13 species. Some families were having cultivated plants. From the given study area so far 5 plants belonging to 4 families have been recorded as well as their medicinal uses were explored. Water-storing tissue is among the most successful of drought adaptations in the plant kingdom. Succulent plants represent a large and diverse resource with extraordinary potential to mitigate the negative consequences of climate change in regions where interventions will be most needed. Knowledge gaps regarding the fundamental mechanisms for water storage and their regulation at the genetic level, are the principle challenges to harnessing these adaptations. Baseline data such as conservation status, representation in ex situ collections and invasiveness risk are essential for decision making to ensure that species with the greatest potential are recognized and the most appropriate species used. *Opuntia elatior* Mill. and *Cissus quadrangularis* L. belongs to different family but have antioxidant properties. There are more than 60 plant families divided into about 300 genera that have evolved succulent species in the world. The succulent plants all over the world mostly distributed in 09 families and are with approximately 6711 plants [2, 4, 5]. The distribution of five species of succulent plants in south India as compared other plant is about 8.1 present. In the Maharashtra 10 genus and 12 species so far been recorded by some workers [15, 16, 17]. The study of succulent plant also was carried out in Marathwada university Botanical garden. In that survey that found 200 species of cacti and succulent plants. In Ahmednagar district of Maharashtra 5 genus and 5 species so far have been found [11]. Floristic study of Parner Tehsil of Ahmednagar District, from Maharashtra [1] was recorded five families with six genera and six species. In Maharashtra some of the explorers of western India in 18th century did floristic studies. This includes Graham (1837) in "catalogue of Bombay plant; followed by the flora of Bombay by Dalzell and Gibson (1861) flora of the presidency of Bombay (1901-1908) continued till to be the most important floristic work for identification of species in Bombay presidency that included Gujarat, Maharashtra, Goa, north Kanara (now in Pakistan) [2, 10, 17, 18]. Succulents are now seen in everything from boutonnières to hanging planters. They are a trend that is taking over not just gardens, but wedding and home decor as well. Succulents are a type of plant that thrives in dry climates. Most succulents come from areas in Africa or

Central America where it is hot and there is little humidity. Because they store water in their leaves, they can withstand long hours in the sun and little watering. Succulents are known for their low maintenance and long life spans, which makes them great for people who work all day, are on the go or just aren't great at taking care of plants. These plants are great for adding structure and vibrance to gardens and homes. There are many types of succulents that can be used as corner plants in a home office or pops of color in a lush garden.

Conclusion

Succulent plants represent a large and diverse resource with extraordinary potential to mitigate the negative consequences of climate change in regions where interventions will be most needed. Some succulent plants are known to show medicinal properties like anti-inflammatory, antioxidant, antipyretic, anti-diabetic, anticancer etc.

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