



A SYSTEMATIC REVIEW OF NATURAL TOXINS IN COMMONLY USED PLANTS

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ABSTRACT

Natural toxins are present in numerous types of plants and these are ingested as food and when consumed in large quantity are not cook properly leads to food poisoning. Plant toxins are generally the metabolites produce through plants to protect themselves against different threats like insects, predators and micro organisms (bacteria, fungi, viruses etc). These can also be found in food plants because of natural choice as well as new reproduction methods which enhance these defensive mechanism. The plant part which may cause toxic effects includes roots, tuber, stem, fruits, buds and foliage. This present review focuses on describing those toxic effects of plants in humans.

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INTRODUCTION

Toxins are the secondary metabolites produced by plants and microorganisms that are identical to extracellular bacterial toxins in their properties. Especially when we take plants into consideration, they show both useful and harmful effects in human beings and animals. They show side effects as well as they are helpful in treating various diseases. Side effects include minor itching, nausea and vomiting.⁷

Adverse effects include psychosis, paralysis, teratogenicity, arrhythmias. They are helpful for the treatment of ulcers, cancers, main ailments and fever. Toxins may enter into the body by inhalation, swallowing or by contact. These toxins are produced by various parts of a plant and they are stored in seed, root, leaf, stalk, fruit where even a relatively small amount, taken internally or externally, can lead to a diseased condition. In some species the poisonous constituents occur throughout the whole plant. In others they are concentrated in one or more plants¹.

Poisonous Indoor plants

A plant that when touched or ingested insufficient quantity can be harmful or fatal to an organism. House plants can be very beneficial in our homes and lives. House plants can not only purify and renew our stale indoor air, by exchanging the carbon dioxide we exhale with life sustaining oxygen, but they can also trap many of the pollutants present in our homes and offices².

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Many of our most popular house plants come from tropical climates where they have adapted to low light levels, making them suitable for the lighting conditions typical in the average home.⁶ However many tropical plants also contain compounds that can have adverse reactions in people, pets and livestock. If you have any of the house plants listed below you should find out how dangerous they are, and if the risk they pose to your children or pets is worth keeping them.¹¹

Poisonous outdoor plants

The Buttercup plant is one poisonous plant you should look out for when buying new plants for your home. Often referred to as “Coyote’s Eyes,” the Buttercup plant generally includes yellow or white flowers with a yellow center.⁴ Some of them have a red and orange color, but they still have a yellow center on them. Generally, the Buttercup plants blossoms in April or May and continues to bloom throughout rest of the summer.⁵ They have a bad taste to them and their juices have a tendency to cause skin ulcers and intestinal problems.

Toxicity class

1. **Major toxicity:** These plants may cause serious illness or death. If ingested, immediately call the Poison Control Centre or your doctor.⁶
2. **Minor toxicity:** Ingestion of these plants may cause minor illnesses such as vomiting or diarrhea. If ingested, call the Poison Control Centre or your doctor.⁷
3. **Oxalates:** The juice or sap of these plants contains oxalate crystals. These needle-shaped crystals can irritate the skin, mouth, tongue, and throat, resulting in throat swelling, breathing difficulties, burning pain, and stomach upset. Call the Poison Control Center or your doctor if any of these symptoms appear following ingestion of plants.⁸

Table no 1 List of various indoor plants and their effects in human body³

S.No.	Plant name	Botanical name	Toxic part of the plant	Toxic substances of the plant	Effects to body parts
1.	Angels Trumpet	Brugmansia	All parts are toxic	Scopolamine, Atropine	Interruptions in stomach
2.	Anthurium	Anthurium Species	Leaves	Calcium oxalate crystals	Severe burns in mouth and skin irritation
3.	Arrowhead Plant	Syngonium Podophyllum	Sap is toxic	Calcium oxalate	Cause skin irritation
4.	Asparagus Fern	Asparagus Species	Poisonous berries	Saponnins	Blistes ,swelling
5.	Calla Lilly	Zantedeschia Aethiopica	All parts especially rhizomes	Calcium oxalate	Kidney failure
6.	Chrysanthemum	Chrysanthemum morifolium	Leaves are poisonous	Pyrethrum	Cause skin irritation
7.	Croton	Codiaeum Variegatum	Poisonous sap	5-Deoxyingenol	Effect to pets
8.	Crown of Thorns	Euphorbia Milli	Sap	Caustic and Irritant chemicals	Irritation in mouth and eye
9.	Cyclamen	Cyclamen species	Roots	Toxic cyclamine	Increased salivation, vomiting, diarrhoea
10.	Daffodil	Narcissus	Bulb	Liquorine	Reflux in stomach
11.	Dumb Cane	Dieffenbachia	Sap	Raphides	Swelling of mouth, throat. vocal loss
12.	English Ivy	Hedera Helix	Leaves	Hedero saponnins	Can cause skin irritation
13.	False Jerusalem Cherry	Solanum Capsicastrum	Poisonous berries	Solanocapsine	Tachypnea
14.	Glory Lily	Gloriosa Superba	All parts	Colchicine, Glorisine, Chelidonic acid	Fatal to dogs
15.	Lilly of the Valley	Convallaria Majalis	All parts	Glycosides	Effects on heart
16.	Oleander	Nerium Oleander	All parts	Cardiac glycosides	Cadiac effect
17.	Peace Lilly	Spathiphyllum	Bulb	Calcium oxalate crystals	Skin irritation, burnings in mouth
18.	Philodendron	Philodendron Bipinnatifidum	Whole plant	Resorcinol	Skin irritation
19.	Poison Primrose	Primula Obconica	All parts	Terpens, Lactones	Can affect sensitive skin
20.	Pothos or Devil Ivy	Epipremnum Aureum	Non-leathel	Raphides	Cause burning sensation in mouth
21.	Sago Palm	Cycas Revoluta	seeds	cycasin, b-methylamino-Lalanine	Cause to liver
22.	Schefflera	Schefflera Arboricola	All parts	Calcium oxalate crystals	Burnings in mouth, skin irritation
23.	Swiss Cheese Plant	Monstera Deliciosa	Leaves	Insoluble Calcium oxalate	Burnings in mouth
24.	Zamioculcas Zamifolia	Zanzibar Gem	All parts	Calcium oxalate crystals	Sensitive to skin



Fig 1 Seeds of Sago Palm (Cycas Revoluta)



Fig. 2 Roots of Cyclamen

4. Dermatitis: The juice, sap, or thorns of these plants may cause a skin rash or irritation. Wash the affected area of skin with soap and water as soon as possible after contact. The rashes may be very serious and painful. Call the Poison Control Center or your doctor if symptoms appear following contact with the plants.¹⁰



Fig 3 Berries of Asparagus Fern



Fig 4 Leaves of Anthurium

Table no 2 List of plants with their toxicity class⁹

S.No	Scientific name	Common name	Toxicity class
1	Abies balsamea	Balsam fir	4
2	Abrus precatorius	Rosary bean, Rosary pea, Jequirity bean	1
3	Begonia spp	Begonia	2,3
4	Brachychiton populneus	Bottle tree	4
5	Caladium bicolour	Caladium	3,4
6	Caltha palustrium	Marsh marigold	2

CONCLUSION

Common poisons that are available in palatable plants that are typically nutritious and useful for wellbeing while ingesting certain sum. The measure of ingestion of plants containing phytochemicals which cause nourishment harming relies upon a few elements like cooking strategies and individual powerlessness. The level of poisons in the nourishment plants shift as indicated by topographical condition and species contrasts. The sustenance plants are securely ingested when suitable measures are taken watchful determination, adequate handling, Adequate cooking and restriction OF Admission. The utilization of new vegetables and natural products decreases the potential danger of more medical issues, for example, cancer, coronary illness, stoutness and diabetes. The general population are encouraged to be careful in the measure of admission and are prescribed to watch the impacts after ingestion, especially for elderly individuals and kids.

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