

KJK KINDER- UND JUGENDKLINIK

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Accidental human poisoning with house plants -Data from five poison information centres

Introduction

Houseplants are increasingly popular due to their positive effects on the indoor climate. While overviews of toxic houseplants and their toxicity to pets are available [1], similar studies on houseplants as a cause of human intoxication are lacking.

In order to better assess the risk of poisoning for toddlers and adults, the BfR-Commission's Plant Committee compiled a list of relevant houseplants and evaluated them according to toxicological aspects.

Methods

A list of houseplants was compiled from two poisons centres (PC) and was retrospectively evaluated against the databases of five poisons centres (PCs) across three countries (2008-2022).

Inclusion criteria were confirmed accidental mono-exposure to a listed plant. Differences in routes of exposure in children (under 14 years of age) and adults (14 years and older), associated symptoms, and involved plant parts were analyzed.

Results

Altogether, 18,621 confirmed exposures to 215 houseplant genera/species were analyzed. 17,636 (94.7%) of these involved children. Overall, asymptomatic exposures predominated (15,678, 84.2%). Minor symptoms were reported in 2,880 cases (15.5%). Moderate symptoms (63 cases, 0.3%) were caused by 19 different houseplant species. There were no severe cases.

In children, oral intake dominated (17,197; 97.5%) followed by dermal exposure (517; 2.9%). In adults, however, oral intake was less common (627; 63.6%), and dermal exposure was more frequent (297; 30.1%). Children were most often exposed to leaves (12,320; 69.8%) and flowers (1,174; 6.6%), adults to leaves (283; 28.7%) and plant sap (266, 27%).

In children, 13.7% of exposures were categorized as minor and 0.2% as moderate. In contrast, only 50.5% of adults were asymptomatic, 46.9% reported minor and 2.6% moderate symptoms.

The three houseplant species most frequently leading to accidental exposures were Ficus spec. (2,937), Zamioculcas zamiifolia (1,852), and Spathiphyllum (1,484) (for all Top 10

see table 1).

Botanical Name	Common Name	Number of
Botanical Name	Common Name	exposures
Ficus spec. L.*	Benjamin fig; weeping fig	2,937
Zamioculcas zamiifolia Engl.	Aroid palm	1,852
Spathiphyllum spec. Schott	Peace Lily, White sails	1,484
Epipremnum spec. Schott	Salomon Islands Ivy	1,235
Crassula spec.	Jade plant, Money tree	1,101
Phalaenopsis spec. Blume	Moth orchid	764
Dieffenbachia spec. Schott	Dumb cane, Leopard lily	805
Euphorbia pulcherrima Willd. ex Klotzsch	Christmas Flower, Poinsettia	734
Monstera spec. Adans	Swiss chease plant	555
Schefflera spec. J.R. Forst et G. Forst	Umbrella plant	494

Asymptomatic exposures only were registered for 89 houseplant species, whereas 19 houseplant species/genera led to moderate poisonings, and another 126 houseplant species to minor poisoning.

Among these were eight *Araceae* (Alocasia, genera Dieffenbachia, Zantedeschia, Epipremnum, Monstera, Philodendron, Spathiphyllum, and Zamioculcas).

Botanical Name (according to [3])	Exposures	Symptomatic	Exposures	Moderate	Poisonings
	[numbers]	[numbers]	[%]	[numbers]	[%]
Euphorbia leuconeura Boiss.	156	95	60.9%	21	13.5%
Alocasia spec. G. Don	190	114	60.0%	1	0.5%
Capsicum annuum L.	65	30	46.2%	1	1.5%
Dieffenbachia spec. Schott*	805	359	44.6%	6	0.7%
Ficus carica L.	40	17	42.5%	4	10.0%
Zamioculcas zamiifolia Engl.*	1852	722	39.0%	4	0.2%
Euphorbia tirucalli L.	125	45	36.0%	1	0.8%
Zantedeschia spec. Spreng.	172	56	32.6%	1	0.6%
Abutilon spec. Mill.	4	1	25.0%	1	25.0%
Dipladenia A. DC. → Mandevilla spec. Lindl.	168	25	14.9%	1	0.6%
Philodendron spec. Schott*	388	47	12.1%	2	0.5%
Ficus spec. L.# *	2937	342	11.6%	6	0.2%
Epipremnum spec. Schott*	1235	131	10.6%	2	0.2%
Schefflera spec. J.R. Forst et G. Forst*	494	47	9.5%	1	0.2%
Spathiphyllum spec. Schott*	1484	135	9.1%	1	0.1%
Monstera spec. Adans.*	555	49	8.8%	2	0.4%
Kalanchoe spec. Adans.	94	7	7.4%	1	1.1%
Euphorbia pulcherrima Willd. ex Klotzsch*	734	49	6.7%	3	0.4%
Crassula spec. L.*	1101	26	2.4%	4	0.4%

*In blue plants from the Top Ten

included were Ficus alii; Ficus benjamina; F. deltoidea, F. elastica; F. ginseng, F. lyrata, F. microcarpa, F. pumila)

Table 2: Plant species causing moderate symptoms in our study: Number of exposures per plant species, number and percentage of symptomatic exposures and of moderate exposures are also given. In the table, they are categorised by frequency of symptomatic exposures.

Discussion

In our study, houseplants caused at most moderate symptoms following accidental exposure. In contrast to garden and wild plants [2,3], severe poisoning was not reported.

Exposure to houseplants was less frequent in adults compared to children, yet the percentage of reported symptoms was much higher. It is possible that adults called because of symptoms rather than fear after exposure.

In average, 16% of the exposed patients developed symptoms. Of the 19 plants that led to moderate poisoning, nine plants also caused symptoms more frequently than the average (for more details see table 2).

The milky sap of Euphorbia leuconeura caused one third of the moderate poisonings reported in our study as well as the highest percentage of symptomatic exposures (61%).

Conclusion

The PCs data has shown to be valuable for identifying those houseplant species causing more than minor and spontaneously resolving poisoning after accidental exposure.

Literature

[1] Bertero A, Fossati P, Caloni F: Indoor companion animal poisoning by plants in Europe. Front Vet Sci 2020, 7: 487

[2] Hermanns-Clausen M, Koch I, Pietsch J, Andresen-Streichert H, Begemann K. Accidental intoxication by outdoor and garden plants: Data from two German poison centres Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz. 2019. 62:73–83

[3] Fuchs J, Rauber-Lüthy C, Kupferschmidt H et al Acute plant poisoning: analysis of clinical features and circumstances of exposure Clin Toxicol 2011. 49:671–680

[4] Erhardt W, Götz E, Bödeker N, Seybold S: (2014) Zander: Handwörterbuch der Pflanzennamen. 19. Auflage Verlag Eugen Ulmer, Stuttgart

Table 1: Top Ten of Houseplant species reported in exposures in our study