

Chemistry

***Dieffenbachia* spp. toxicity: a narrative review**

Toxicidade de *Dieffenbachia* spp.: uma revisão narrativa

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ABSTRACT

Dieffenbachia spp., commonly known as "*comigo-ninguém-pode*" in Brazil, is a widely cultivated ornamental plant. Despite its popularity, the plant poses significant toxic risks, particularly to children. The plant's toxicity is primarily due to calcium oxalate crystals and other toxic substances, which can cause severe irritation and, in some cases, life threatening symptoms. This narrative review aims to summarize the current knowledge on the toxicity of *Dieffenbachia picta*, including its toxic compounds, mechanisms of action, and clinical manifestations. A comprehensive literature review was conducted using databases such as PubMed, LILACS, EMBASE, and Google Scholar, focusing on studies related to the toxicity of *Dieffenbachia* spp. The review highlights that *Dieffenbachia picta* can cause severe local damage to tissues upon contact, primarily due to calcium oxalate raphides. These needle-like crystals penetrate the mucous membranes, leading to intense pain, inflammation, and, in some cases, respiratory distress. Although treatments are available, prevention of exposure, especially in households with children, remains crucial. Given the widespread use of *Dieffenbachia picta* as an ornamental plant and the potential risks associated with its toxicity, increased public awareness and preventive measures are necessary to reduce the incidence of poisoning.

Keywords: *Dieffenbachia* spp.; Ornamental plants; Poisoning; *Comigo-ninguém-pode*

RESUMO

Dieffenbachia spp., conhecida popularmente como "*comigo-ninguém-pode*" no Brasil, é uma planta ornamental amplamente cultivada. Apesar de sua popularidade, a planta apresenta riscos tóxicos significativos, principalmente para crianças. A toxicidade da planta deve-se principalmente aos cristais de oxalato de cálcio e outras substâncias tóxicas, que podem causar irritação severa e, em alguns casos, sintomas potencialmente fatais. Esta revisão narrativa tem como objetivo resumir o conhecimento atual sobre a toxicidade de *Dieffenbachia picta*, incluindo seus compostos tóxicos, mecanismos de ação e manifestações clínicas. Uma revisão abrangente da literatura foi realizada utilizando bases de dados

como PubMed, LILACS, EMBASE e Google Scholar, com foco em estudos relacionados à toxicidade de *Dieffenbachia* spp. A revisão destaca que *Dieffenbachia picta* pode causar danos locais severos aos tecidos por contato, principalmente devido aos ráfides de oxalato de cálcio. Esses cristais em forma de agulha penetram nas membranas mucosas, causando dor intensa, inflamação e, em alguns casos, dificuldade respiratória. Embora existam tratamentos disponíveis, a prevenção da exposição, especialmente em residências com crianças, continua sendo crucial. Considerando o uso generalizado da *Dieffenbachia picta* como planta ornamental e os riscos potenciais associados à sua toxicidade, é necessário aumentar a conscientização pública e adotar medidas preventivas para reduzir a incidência de envenenamento.

Palavras-chave: *Dieffenbachia* spp.; Plantas ornamentais; Intoxicação; *Comigo-ninguém-pode*

1 INTRODUCTION

Dieffenbachia spp. (*D. Picta*, *D. Seguene*, *D. Exotica*, etc...) is an ornamental plant known as “comigo-ninguém-pode” in Brazil. This plant come from neotropical realm of the Americas, including the West Indies, Brazil, and Bolivia, it is primarily found in tropical regions of the Americas, Africa, and Southwest Asia, with representatives also present in the Northern Hemisphere (Ladeira, Andrade, Sawaya, 1975).

According to the 2023 annual service report published by the toxicological information from Rio Grande do Sul (CIT-RS), a total of 38 cases occurred display in front of the *Dieffenbachia* spp. plant. It is noteworthy that the public most affected are children and young people (N= 34) (Rio Grande do Sul, 2023). Accidental exposure is the biggest cause of poisoning due to *Dieffenbachia* spp., which shows the lack of knowledge among the population regarding its toxicity. A presentation of toxicity can occur through oral, ocular and dermal contact, with general symptoms from oedema to asphyxiation, including the possibility of death (Silva & Takemura, 2006; Dewick, 2002). The mechanisms of *Dieffenbachia* spp. toxicity appear to be multiple, in which raphides, idioblasts and other protein or non-protein substances unidentified, contribute to some degree (Silva & Takemura, 2006; Dewick, 2002).

Thus, considering the high degree of exposure to this specimen and the most affected individuals and also in the other age groups of the general public, it is

extremely important to know the toxicity of this plant, main toxic compounds and clinical manifestations.

2 MATERIAL AND METHODS

The review was carried out using databases from the following platforms: MEDLINE (Pubmed), LILACS (Scielo), EMBASE (Elsevier) and Google Scholar in languages English, Portuguese and Spanish. Descriptors: Toxicity, *Dieffenbachia* spp., *comigo-ninguém-pode*, plants poisonous, poisonous plants.

3 LITERATURE REVIEW

3.1 Plant poisoning data

In the year 2022, the American Association of Poison Control Centers received 50392 reports involving poisonous plants, which 6210 reports were of poisoning by oxalate containing plants, with most cases including children under 5 years of age (4485 cases), however no fatalities (Baltar et al., 2017; AAPCC, 2022; Gummin et al., 2023).

Children in the age group under 5 years of age are those most exposed to poisoning by toxic plants (Gummin et al., 2023). Only in the Rio Grande do Sul State (Brazil), a total of 325 cases occurred by poisonous plants exposure, which involved children under 6 years of age (n =118; 36.30%) (Rio Grande do Sul, 2023). So, supervision and attention by parents and/or guardians in relation to children is extremely important, in order to prevent and consequently reduce the number of cases of poisoning by toxic plants in this age group. An effective alternative for prevention is to keep these plants of a toxic nature out of the reach of children at home environmental (Rio Grande do Sul, 2023).

3.2 *Dieffenbachia* spp.

Dieffenbachia spp. belong to Araceae family, constituted by herbaceous monocots with 106 genera, it is a complex group in terms of life form and ecology. The family is large, with almost an equal number of genera in the Old and New Worlds, however with most species occurring in the New World tropics. Some genres vary across regions northern temperate with a species ranging to at least 63 degrees latitude north (Figure 1A) (Díaz et al., 2007).

The most interesting aspect of the family's ecology is the diversity of life forms adaptive. These range from sub-aquatic to floating and emergent aquatic to terrestrial plants and epilithic or epiphytic forms that may be true epiphytes or hemiepiphytic (growing on trees, however rooted in the soil) (Croat, 1988). The main characteristics of this species are the large, oblong leaves, with about 30 to 60 cm long, featuring colorful ornamental designs in blank; fruits in the form of berries; off-white latex; and oxalate crystals calcium in the form of raphides and drusen (Schutz, 1968; Ferreira, Marsola, Teixeira, 2006).

Dieffenbachia spp. has been studied for its anatomical features, including the distribution of crystals, laticifers, and starch grains in its vegetative organs. These structures are believed to be responsible for the mechanical and chemical irritation caused by the plant. The anatomy of the leaves, aerial stems, rhizomes, and roots has been described through histological sections stained with toluidine blue (Ferreira, Marsola, Teixeira, 2006). These plants are native to tropical areas and are now commonly found in the domestic environment. There are 25-30 species, however main species are *Dieffenbachia picta* Schott and *Dieffenbachia seguine* (both known as "comigo-ninguém-pode" in Brazil) (Cumpston et al., 2003).

In some countries, its popular name is "Dumb Cane", a suggested name due to the toxicity of this plant when it reaches the oropharynx, incapacitating the person to talk for a few days. During the period of slavery in Jamaica, there are relates of African slaves were punished by rubbing the plant in the mouth and there are numerous cases

of people masking the plant or being victims of pranks. Considering high toxicity and lethality, the plant's juice was used in Germany in experiments to sterilize concentration camp inmates in the World War II according documents showed in the Nuremberg tribunal (Gardner, 1994). This species is commonly found as an ornamental, generally grown in pots (Chiou, Cadez, Bohnke, 1997; Poison Control, 2020). Figure 1B shows some typical specimens.

3.3 *Dieffenbachia* spp. toxicity

Dieffenbachia spp. causes severe local damage to tissues due to crystals of calcium oxalate contained in the plant juice (Pamies et al., 2012). The formation of crystals is usually associated with membranes, chambers or inclusions found in the cellular vacuole(s). Modified tubules, plastids, and enlarged nuclei have also been reported in crystal idioblasts (Franceschi & Horner, 1980). After the expulsion of the crystals, these structures pierce the tissue of the oral mucosa, and other substances were able to promote the damage tissue (Fochtman et al., 1969; Rocha et al., 2006).

3.3.1 Dumbcane

This particular aspect from *Dieffenbachia* spp. allows the entry of a cysteine enzyme known as dumbcaine, a proteinase ananalog to trypsin, which promotes cell destruction and consequent excessive salivation, a sensation of pain and burning in the oral mucosa (Fochtman et al. 1969) similar to the effects of the enzyme bromelain found in pineapples as a defense mechanism (Amaral et al., 2009; Morais et al., 2009).

The substance promotes triggering a local inflammatory process, oedema and blisters on the mucous membranes caused by the release of serotonin, hystamin and other amines during the contact or ingestion of this plant. The treatment is similar to that used for poisoning corrosive substances and requires hospitalization. The diagnosis of poisoning is not complicated and cycloplegics drugs or moderate steroids

from glucocorticoid type can be administrated in the patient as well as support management (Rocha et al., 2006; Dewick, 2002).

Dumbcaine is a poisonous substance present in *Dieffenbachia* spp., remain poorly understood due to limited chemical and biological studies. The research suggests that the toxic component may be a poisonous alkaloid, sapotoxin glycoside, or another bitter substance. Additionally, while the presence of calcium oxalate is noted, the study finds that the amount of soluble or total oxalate in *Dieffenbachia* spp. is comparable to that found in several edible vegetables, indicating that calcium oxalate alone is not responsible for the plant's toxicity (Oloyede et al., 2022).

3.3.2 Calcium oxalate crystals

Crystals in plants are formed from of endogenously synthesized oxalic acid and Ca from the environment. Oxalic acid ($C_2H_2O_4$) is the simplest of the dicarboxylic acids and the most common organic compound oxidized substance formed in plants (Franceschi & Nakata, 2005).

Nakata (2012) specifies the functional roles regarding the formation of calcium oxalate crystals in plants based in functions of calcium regulation, sodium and potassium balance, plant protection (form of defense against predators), tissue support (plant rigidity), light collection and reflection, and detoxification (e.g. metals heavy or oxalic acid).

Calcium oxalate crystals formation from plant metabolism derived from the secondary metabolism of parenchyma cells and it is considered as extremely toxic products. The distribution of these crystals within the plant is highly variable between species. Calcium oxalate crystals can occur in a single tissue or may be found in multiple tissues of an individual species. It is found in vegetative, reproductive, storage and developing organs and also in photosynthetic and non-photosynthetic tissues (Raven & Smith, 1976; Franceschi & Nakata, 2005).

Plant species that produce latex (known as lactescent species) as *Dieffenbachia* spp., commonly presents idioblasts containing raphides in the tissues. Idioblasts structures are cells that have vacuoles with particular substances such as calcium oxalate crystals, a substance derived from the secondary metabolism of parenchyma cells. The crystals found form druses, raphides and single crystals. Idioblasts with raphides are found in the stem and leaves of "*comigo-ninguém-pode*" (*Dieffenbachia* spp.), (Rocha et al., 2006).

3.3.3 Raphides

Raphides are present in the constituent structure of the plant *Dieffenbachia* spp., specifically in the leaves and stem, in the form of needles. According to Gardner (1994), raphides formed by calcium oxalate (Fig. 1E) are considered the main cause of injuries in mucous membranes (Gardner, 1994).

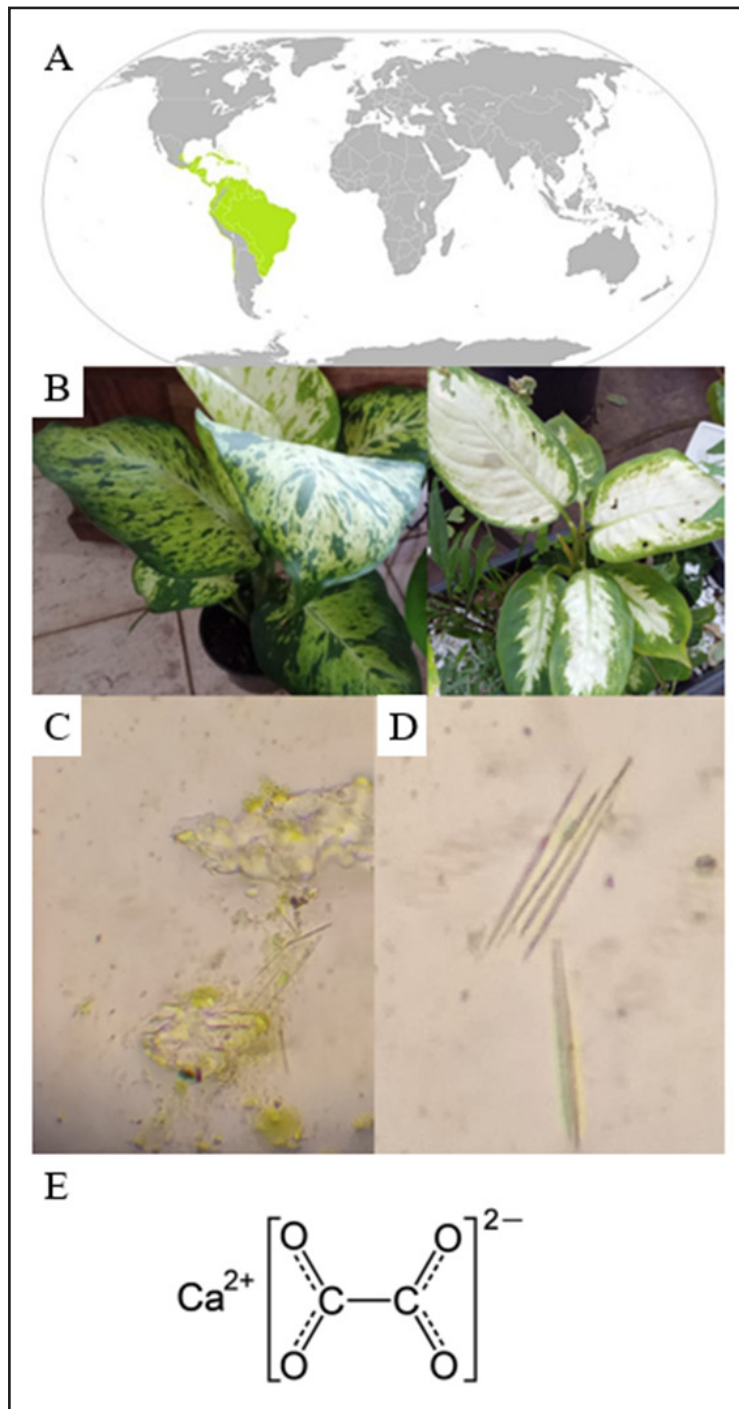
Gardner (1994) also postulated the presence of crystal idioblasts inside the plant *Dieffenbachia* Schott, where they have a shape in which resembles a cigar, with double refractory cell walls, rigid and thick, except for their extremities where they are thin and form a kind nozzle (Gardner, 1994). Idioblasts contain a dense ground substance that surrounds a bundle of between 100 and 2000 double-pointed needle-shaped raphides demonstrated in microscopy (Rocha et al., 2006). In figure 1C, it is possible to observe a ruptured idioblast from part of the leaf of the *Dieffenbachia* plant and raphides in figure 1D.

They are capable of shooting these needles with some force, like projectiles, one at a time, for a distance of two to three cell lengths. The stimulus for the shooting of these projections is probably mechanical, caused by the plants being bitten. This results in the cells being crushed and/or the tips breaking off (Gardner, 1994).

Raphides are generally considered to consist solely of calcium oxalate crystals. However, there is evidence that they are covered by a cellulose membrane, which

suggests that they are more complex structures than merely precipitated crystals. There is a hypothesis that the raphides are coated by a mucilaginous structure (Gardner, 1994).

Figure 1 – A) Distribution of endemic species of *Dieffenbachia* spp. in the New World



Source: (https://upload.wikimedia.org/wikipedia/commons/thumb/8/82/Dieffenbachia_distribution.jpg/500px-Dieffenbachia_distribution.jpg); B) Common exemplars of *Dieffenbachia* spp. C) Ruptured idioblast (magnified 40x); D) Raphides constituted by calcium oxalate (magnified 100x). E) Calcium oxalate molecular complex. Source (B-C-D-E): Author

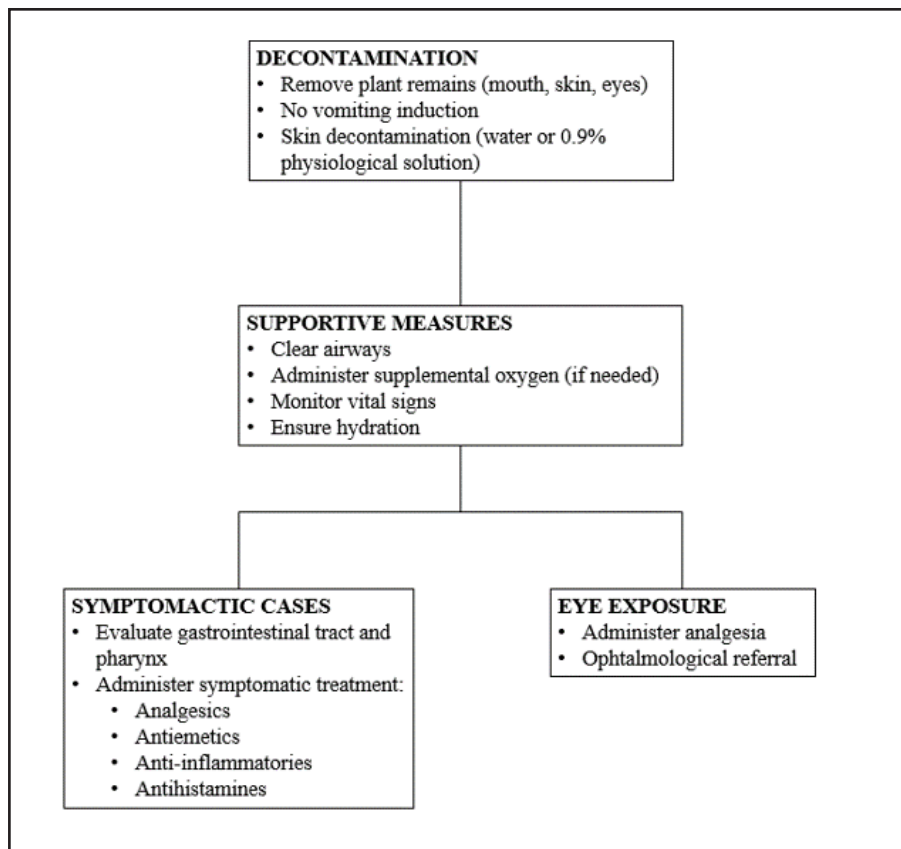
3.4 Clinical and pharmacological treatments used in cases of *Dieffenbachia* spp. poisoning

According to Chiou and collaborators (1997) treatment should be aimed at relieving pain using non-steroidal anti-inflammatory drugs in the treatment of occasioned inflammation, pain and oedema, and cycloplegics drugs depending on the symptoms evaluated in the patient and the severity of the case (Chiou, Cadez, Bohnke, 1997).

Initial recommendations for decontamination initially refer to the removal manual of any plant remains in contact with the mouth, skin or eyes, do not induce vomiting and carry out skin decontamination with water or a physiological solution 0.9% in skin or ocular areas. Supportive measures refer to clearing the airways and administering supplemental oxygen if necessary, monitoring vital signs and undergoing an adequate hydration (COVISA-SP, 2017).

In symptomatic cases, the procedure is presented by evaluation of the airways, gastrointestinal tract and pharynx, the latter being region described as high priority after ingestion of these toxic species. Following the administration of analgesics, antiemetics, anti-inflammatories and/or antihistamines drugs to treat symptoms. In cases relating to eye exposure conditions requires analgesia and ophthalmological referral to evaluate the injury and procedures applicable to the case (COVISA-SP, 2017).

Figure 2 – Recommendation flowchart of treatment and symptoms mitigation actions



Source: Authors, 2026

3.5 Religious practices for medical approach

Religious practices for medical approach are known as 'Blessing', an ancient form of treatment for various diseases, used in Europe since the Middle Ages. In Brazil, faith healers emerged from the 17th century onwards. Blessers indicate plants for healing purposes or as protective amulets, with the presence of these forms of use of flora in popular culture (Maciel & Neto, 2006).

Dieffenbachia spp. is involved in the blessing culture, linked to use for protection, specifically, against the 'evil eye', which practical specification is based in cleaning soul bath (Maciel & Neto, 2006; Pagnocca, Zanc, Hanazaki, 2020). In Brazil, there is the habit of using *Dieffenbachia* spp to cure illnesses that involves an exchange of traditional

popular knowledge. Generally, such formulas were created by older people who tried, tested and approved these traditional aspects (Maciel & Neto, 2006).

3.6 Possible health benefits from exposure to *Dieffenbachia* spp.

Despite the toxicity of *Dieffenbachia* spp., Oloyede and collaborators (2022) have shown that this plant exhibits significant potential in immunology due to its antioxidant and antimicrobial properties. Phytochemicals such as alkaloids and flavonoids further modulate immune responses by boosting cytokine production, enhancing immune cell activity, and providing anti-inflammatory effects, thereby contributing to a balanced immune response.

Ultimately, *Dieffenbachia* spp. has the potential to enhance immune defense, reduce oxidative stress, and serve as a source for antimicrobial agents. When these molecules are recognized, cell activation occurs in neutrophils, lymphocytes, and mast cells, as previously described by Gardner (1994). These cells, as explained by Silva (2015), promote their antimicrobial and pro-inflammatory functions.

4 DISCUSSION

Despite the potential benefits of *Dieffenbachia* spp., there is still limited research on the plant (Silva, 2015; Gardner, 1994; Oloyede et al., 2022), and its toxicity remains a major concern. In this sense, Ferreira and collaborators (2006) demonstrated calcium oxalate crystals promotes toxic reactions for the presence of lipids and proteins in the content of the analyzed crystalliferous idioblasts in conjunction with the presence of alkaloids in the latex of the *Dieffenbachia picta* Schott plant. Similar results were obtained by Gardner (1994).

Rocha and collaborators (2006) related that poisoning from *Dieffenbachia* spp. can occur via direct expulsion of whole plant organs or only raphides structures. Calcium oxalate crystals liberation is capable of shooting with projectile force, where

the stimulus to shoot is mechanical. Similar, Gardner (1994) explained the case of bites on the plant, leading to crushing of the cells and/or breakage of its ends while Rocha and collaborators (2006) demonstrated that condition facilitate the entry of the dumbcaine, where its contact promotes the destruction of cells in the tissues, triggering a local inflammatory process and the formation of oedemas.

Microscopic characteristics generated by the lesion in the mouse reported by Gardner (1994), being of the acute inflammation type due to the appearance of oedema of accentuated form, caused by the intoxication of calcium oxalate crystals, which appearance of numerous neutrophils, lymphocytes and mast cells. Inflammatory process is characterized by the production of fluids, chemical substances and injured cells, with vascular changes, recruitment and activation of leukocytes to induce cellular repair, leading to tissue and functional changes which configure the five main signs in the inflammatory process: heat, redness, swelling (oedema), pain and loss of function. Heat and redness are consequences of vasodilation, which increases blood circulation in the area inflamed (hyperemia), due to the concentration of blood and increased temperature due to greater blood flow (Etienne, Viegas, Viegas Jr, 2020).

Swelling is a consequence of increased vascular permeability that allows vascular leakage of fluids and, therefore, the formation of oedema. When pain appears in the organism, both by compression of nerve endings by oedema, and by chemical substances (cytokines, chemokines and prostaglandins) released in the body as a response to tissue injury. Finally, there is loss of function, which it can be total or partial due to oedema and pain, mainly in joints and tissues or limbs related to movement, limiting or preventing the routine of individual and making activities in general difficult (Etienne, Viegas, Viegas Jr, 2020).

Fochtman and collaborators (1969) evaluated irritation due to the presence of calcium oxalate and calcium oxalate crystals from the juice of the *Dieffenbachia picta* Schott plant in albino mice, males and females weighing between 200 and 250g. Male

and female mouse received three different types of dosages of the plant juice by gavage (40 mL/kg, 80 mL/kg and 160 mL/kg). The last two dosages being administered in a 4 hours interval (40 mL/kg per dose). The animals were analyzed for a period 14 days, after this period, the analyzed mice were sacrificed and their organs were analyzed macroscopically (Fochtman et al., 1969).

Fochtman and collaborators' study (1969) placed concentrated *Dieffenbachia* spp. juice in the oral cavity of a normal mouse. They then displayed photographs of the oral cavity before and after administering 0.15 mL of the juice from one of the two plant species analyzed in the study (*Dieffenbachia exotica*, *Dieffenbachia picta* Schott). This poisoning case was compared by Fochtman and colleagues (1969) to intoxication in humans. Following the procedure, two mice from each group were sacrificed, and their tongues were removed and prepared for macroscopic study. At the end of the study, no pathological changes were observed in any of the animals after macroscopic examination.

Oral toxicity of the *Dieffenbachia* plant is based mechanical release of the raphides in the shape of needles, containing calcium oxalate crystals inside where in together with the effects of a chemical toxin, possibly a protease as dumbcaine, generates an injury to the oral mucosa tissue, triggering an inflammatory process (Bechara & Szabó, 2006). In this sense, *Dieffenbachia* spp. promotes inflammation, which is established through recognition by receptors of pattern recognition (PRRs), of molecular structures characteristic of microbial pathogens. Pathogen-associated molecular patterns (PAMPs) – such as LPS, unmethylated DNA (CpG) sequences, and double-stranded RNA – also recognize host-derived intracellular molecules that are released upon cell damage or death and the molecular patterns associated with damage (DAMPs) – such as chemokines (IL-8), cytokines (TNF- α), interleukins (IL-1, IL6) (Silva, 2015).

So, there is a release of inflammatory mediators, responsible for different local changes, initially manifested by the dilation of vessels in the microcirculation,

increased blood flow and vascular permeability, with plasma fluid extravasation and oedema formation, cell diapedesis to the extravascular environment, phagocytosis, increased blood viscosity and decreased blood flow, which may even lead to stasis (Bechara & Szabó, 2006).

Clinical symptoms caused by oral poisoning by the plant *Dieffenbachia picta* Schott are also described according to Cumpston and co-authors (2003). Immediate pain immediate, intense salivation, ulcer, vomiting, diarrhea, dysphagia, tongue and glottis oedemas, the latter being reported in cases of fatality where a severe oedema of the glottis, as a result of obstruction of the respiratory system (Loretto et al., 2003).

In the evaluation of intoxication by ocular route, it was analyzed in rabbits by Fochtman and collaborators (1969). It was carried out using the recent juice of *Dieffenbachia exotica* and *Dieffenbachia picta* Schott in a 5% calcium oxalate suspension was a comparison was made in the images with the normal mouse eye and then after administration of fresh juice from the *Dieffenbachia picta* Schott plant. The rabbit's eye showed clinical signs of inflammation after being given the prepared juice. There was significant redness around the eye and prominent swelling of the tissue both inside and outside the eye rabbit (Fochtman et al., 1969). Similarly, Vieira (2013) demonstrated that ocular poisoning is initially mediated by the triggering of the inflammatory process as previously described in the example of oral intoxication, followed by severe pain, swelling, photophobia, blepharospasm, tearing, injury cornea and conjunctivitis.

Analysis of irritating and consequently toxic effects upon contact and administration of juice from the *Dieffenbachia picta* Schott plant in humans was described by Rizzini and Occhioni (1957). By placing a small drop of the residue from the centrifuge juice of the *Dieffenbachia picta* Schott plant, without warning the individual claiming that it is another liquid (Rizzini & Occhioni, 1957), it is worth highlighting that this type of conduct taken in experimental tests, is currently completely incorrect through clinical trial protocols.

Rizzini and Occhioni (1957) reported local burning in the first one minute after *Dieffenbachia picta* Schott juice administration, in which throat application demonstrated particular burning with swallowing and persistent movements with pain. This condition decreased around 30 minutes later, however these clinical manifestations showed prolonged irritation in the mucosa.

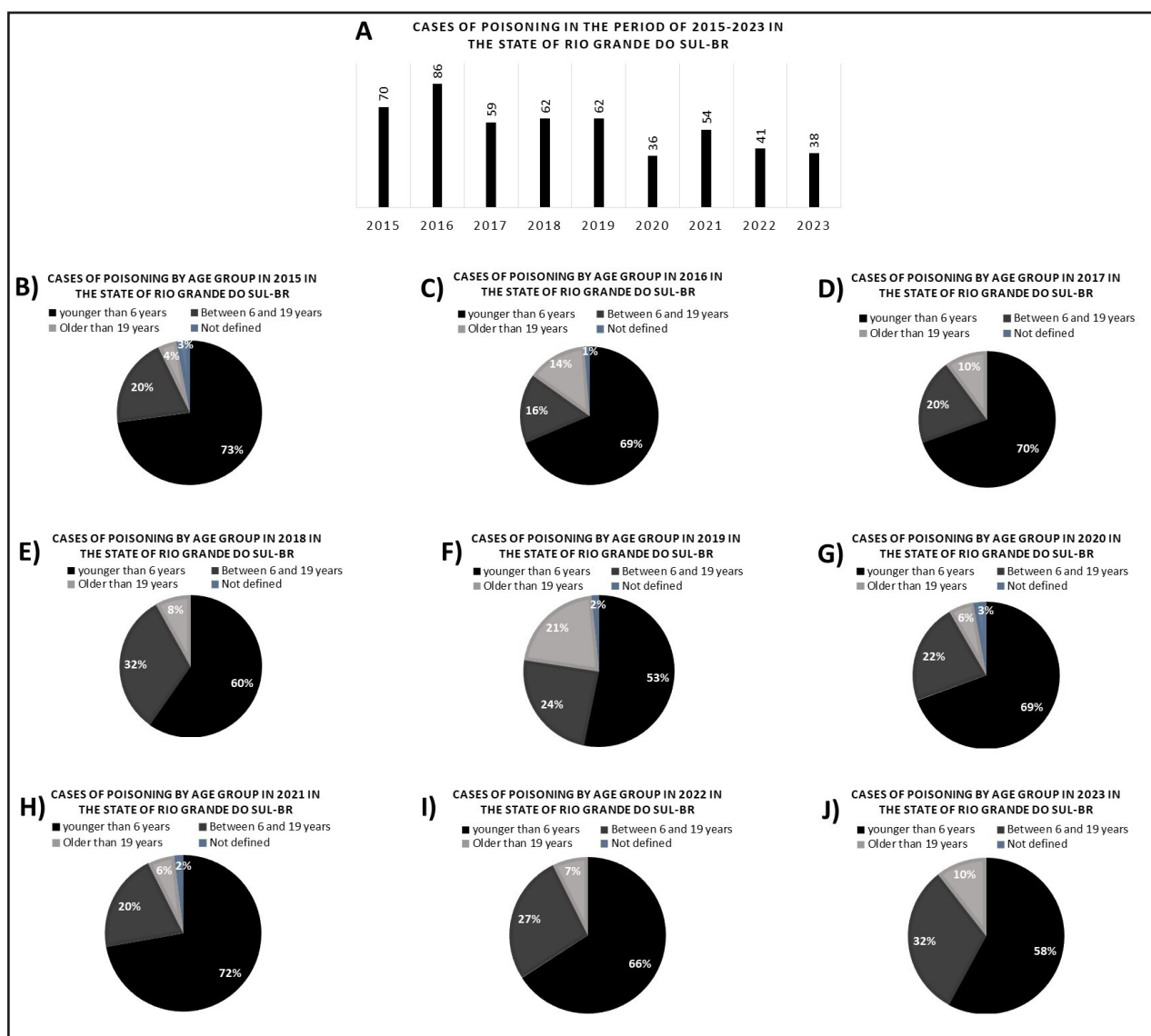
Adhikari (2012) reported a case of poisoning involving a nine-year-old boy who was sent to an emergency room after chewing the leaf of the *Dieffenbachia picta* Schott with typical symptoms and intense salivation, severe abdominal pain, however without compromising the airway aerial. After a period of 1 hour, an extensive membrane erythema on the mucous membrane of the mouth and throat with an intense swelling of the tongue were observed, similar to Fochtman and co-authors (1969). The boy was hospitalized and treated with intravenous fluids and drugs (analgesics, antacids, antihistamines drugs and ranitidine). The patient was unable to take any type of oral ingestion in the first two days after intoxication, where from the third day onwards there as a decrease in swelling and redness of the tongue, emphasizes “dumb cane” denomination.

It was observed that poisoning situations with *Dieffenbachia* spp. were more common involving pediatric case reports in Brazil, especially Rio Grande do Sul state (south of the Brazil). Probably high exposure to this plant could be related to the high number of intoxication of children and young adults in the period of 2015-2023 in this state (Figure 3) (Rio Grande do Sul, 2025).

Dieffenbachia spp. is an ornamental plant sought after around the world, despite its toxicity potential, due to high access in the domestic environment. In this aspect, the Google Trends tool allowed us to check the parameters of popularity related to the dumb cane plant in Brazil, in the interval of four years, using the following term in the Portuguese language: “comigo-ninguém-pode” in the category “plantas”. Google Trends normalizes data based on total searches restricted to

geography and time interval, to compare the popularity relative, on a scale from 0 to 100 (Google Trends, 2025).

Figure 3 – Cases of poisoning by *Dieffenbachia* spp. from 2015 to 2023. A) Total cases per year; Cases by year grouped by age range: B) 2015, C) 2016, D) 2017, E) 2018, F) 2019, G) 2020, H) 2021, I) 2022, J) 2023

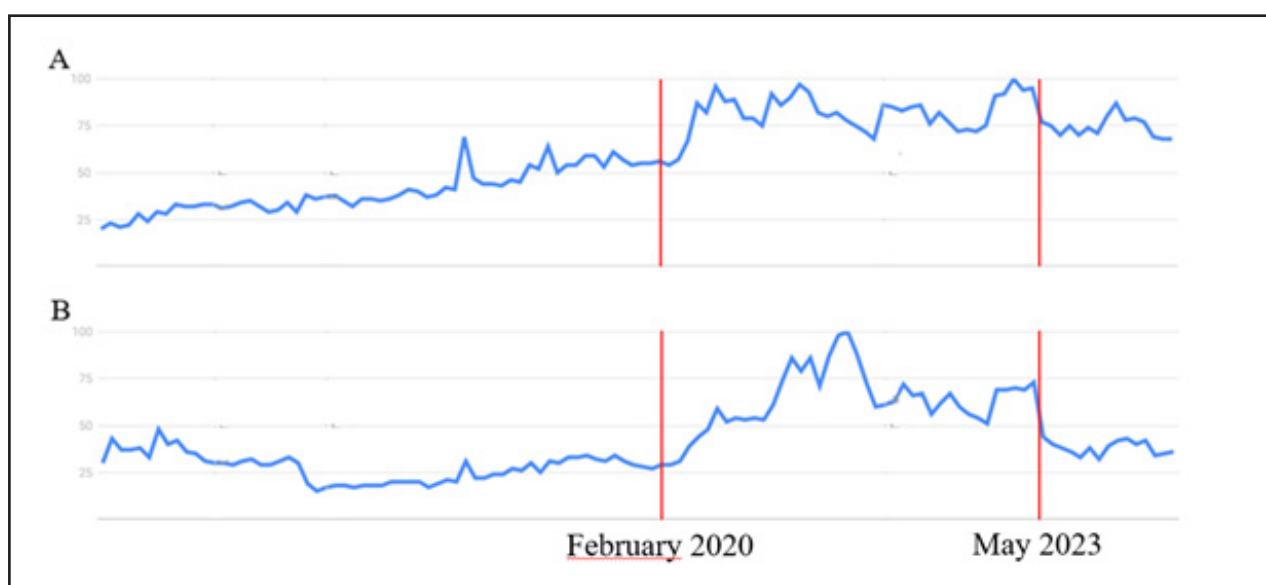


Source: Authors, 2026

The data presented in Figure 4 indicates a significant increase in searches for the term “comigo-ninguém-pode” in 2020, demonstrating that Brazil remained consistently higher than the worldwide trend. This could be attributed to an increased

interest in home decoration and superstitions among the population. The heightened interest may be a result of the COVID-19 pandemic, prompting many people to start growing plants in their homes, especially the *Dieffenbachia* spp., for ornamental use. Additionally, the plant's association with protection from the "evil eye", as discussed by Pagnocca, Zank and Hanazaki (2020), may have contributed to the increased interest.

Figure 4 – Search interest from January 2015 until September 2025. A) Brazil; B) Worldwide. COVID-19 pandemic period between the red lines



Source: Authors, 2026

Vasconcelos and collaborators (2009) demonstrated in their study about toxic plants that 50.7% of people interviewed reported that they never have had contact with or known of any case involving plant poisoning, while 49.3% have already had contact or heard news about the subject. Nearly 68.7% reported that the contact/ingestion was accidental, 25% attempted to obtain medicinal use of the plant and 6.3% remaining used the species with the intention of inducing effects in themselves hallucinogens or narcotics.

The respective constituent parts of the plant that caused the poisoning were also demonstrated, which 54% of respondents pointed out the leaves, followed by

fruits (11%), and the stem (8%), while bark and flowers were mentioned in 9.3% of occurrences (Vasconcelos & Vieira, 2009).

So, it can be observed that the leaves constitute a more accessible means of exposure for the occurrence of cases of intoxication. As a result of these circumstances, care for places that have easy access to the *Dieffenbachia* spp. are of paramount importance for the prevention of cases of poisoning. In this sense, knowledge, correct identification of toxic plants and prevention are some of the main methods to be considered to avoid and/or act on *Dieffenbachia* spp. poisoning as well as other toxic plants.

5 CONCLUSION

Proper handling and placement of the *Dieffenbachia* plant are essential to prevent accidental exposure, as it has toxic compounds, especially in households with children and pets. With prompt and appropriate treatment, the prognosis for *Dieffenbachia* spp. poisoning is generally favourable. Yet, the toxic compounds from *Dieffenbachia* spp. triggers very severe intoxication, mild and systemic in the body of the individual who was exposed, where in severe cases of intoxication, lead to the death of the individual.

Given this information, greater presentation and discussion becomes relevant among the media regarding the risks of poisoning with plants, mainly from ornamental types, together with health education action programs for population across age groups in general, to raise awareness and reduce the number of cases of poisoning due to exposure to the *Dieffenbachia* spp.

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