

## RECORDS OF EXPOSURES TO PLANT AND PLANT-DERIVED PRODUCTS COLLECTED BY THE POISON CONTROL CENTER OF POLICLINICO UMBERTO I – SAPIENZA UNIVERSITY OF ROME

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**Introduction:** In Italy, Adverse Reactions (AR) to a large variety of products are monitored, by the Poison Control Centers (PCC) that receive calls about these events and give the appropriate therapy if it is necessary, and the "Istituto Superiore di Sanità" that can be reached through the VigiErbe website and an ad hoc reporting form. The safety profile of botanicals (a plant or a part of it, used for their medicinal properties, flavor and/or scent), may be sometime under evaluated, thus exposing the population to potential risks. Aim of this study was to analyze the data concerning the exposures to botanicals, collected from the medical staff of the PCC of the Policlinico Umberto I.

**Material and methods:** The AR reported have been analyzed from January 2013 to December 2018. The suspected agents were classified as follow: i) plants (spontaneous/ornamental), ii) herbal supplements and other products used for complementary/alternative therapies, iii) food (plants used as food) and iv) other agents (including mosquito repellents, perfumes, cosmetics, etc.). Reports, received by the PCC, related to drugs, cleaning products (caustic and foam), animal bites, flammable products, pesticides, were not included in this study. For each AR the following parameters have been considered: identification of the plants or herbal derived products, possibly responsible for the exposure; characteristics of patients, the time interval elapsed between the event and the call, source of the report and circumstances in which AR occurred and other parameters (i.e.: symptoms) when available.

**Results:** During the period considered, of total data collected from the PCC, the 5% exposures (n=366) were related to botanicals (50% females, n=182). The 49% (n=179) involved children ≤6years old, 6% (n=23) subjects from 7 to 17years old and 35% (n=128) adults ≥18years old (average age: years  $49.6 \pm 18.2$ , range 17-93). In the 10% (n=36) of cases the age was not reported. Thirty-six percent (n=131) of the suspected AR were due to plants, 18% (n=68) were related to herbal supplements and other products used in the complementary/alternative therapies, 23% (n=83) to food, 23% (n=84) to other herbal agents (not comprising in the above categories). The ornamental plants reported as responsible of the exposures were mainly: Nerium oleander L, and Euphorbia pulcherrima Willd, medicinal plants used as principal ingredients of herbal supplements and/or products of complementary and alternative medicines, were mainly essential oil (Melaleuca alternifolia). Plants present in the food were tomato and chili pepper. Other herbal agents were terpenes (geraniol), lemongrass and cocoa butter. The time elapsed from exposure to the PCC call was usually less than 2hours (60%). The callers were 65% citizens, 29% physicians, 6% non-medical health care practitioners. Sixty-seven percent of exposures were accidental (half of these occurred in domestic environment), 13% voluntary, 4% for wrong administration, 3% side effects, 13% of exposures derived from unknown risk. The exposures were mainly caused by ingestion (69%) and by contact with the oral mucosa (13%).

**Discussion and conclusions:** This study highlights that: i) exposures to botanicals, often concerning children, occur mostly in the domestic environment; ii) a high number of AR involved essential oils, probably because their extensive use as a component of air fresheners for indoor environment (sprays, candles), mosquito repellents and after-bite sticks; iii) these latter products are widely used in the infant population to prevent or relieve of bite's itching, perhaps for this reason children are particularly exposed iv) improving the knowledge of the risks connected with the use of botanicals and of their safety profile would facilitate the prevention of adverse outcome.