Study finds 275,000 calls to poison control centers for dietary supplement exposures from 2000 through 2012

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U.S. Poison Control Centers receive a call every 24 minutes, on average, regarding dietary supplement exposures, according to a new study from the Center for Injury Research and Policy and the Central Ohio Poison Center, both at Nationwide Children's Hospital.

The study, published online today in the *Journal of Medical Toxicology*, found the rate of calls regarding dietary supplement exposures increased (46.1%) during 2000 to 2002, decreased (8.8%) during 2002 to 2005 and increased again (49.3%) from 2005 to 2012. The decrease from 2002 to 2005 most likely resulted from the U.S. Food and Drug Administration's (FDA) ban of the botanical stimulant ma huang previously found in some dietary supplements.

Seventy percent of dietary supplement exposure calls occurred among children younger than six years old and the majority of these were unintentional. Most exposures (97.3%) occurred at home, and in more than 97 percent of the cases, the child swallowed the substance. Serious medical outcomes accounted for 4.5 percent of exposures and the most serious outcomes (95.0%) occurred among children six years and older.

"Many consumers believe dietary supplements are held to the same safety and efficacy standards as over-the-counter medications," said Gary Smith, MD, DrPH, senior author of the study and director of the Center of Injury Research and Policy at Nationwide Children's. "However, dietary supplements are not considered drugs, thus they are not required to undergo clinical trials or obtain approval from the FDA prior to sale, unless the product is labeled as intended for therapeutic use."

Miscellaneous substances found in commonly used dietary supplements accounted for the majority of exposure calls (43.9%). Other substances involved in exposures included botanicals (31.9%), hormonal products (15.1%), and other supplements (5.1%). Amino acids, cultural medicines

and energy products each account for less than (2.0%) of exposures.

The dietary supplements with the highest proportion of serious medical outcomes were energy products, botanical and cultural medicines. Within the botanical category, yohimbe accounted for the largest proportion of serious medical outcomes (28.2%).

Nearly 30 percent of yohimbe exposure calls resulted in moderate or major effects. Yohimbe can cause heart beat rhythm changes, kidney failure, seizures, heart attack, and death.

Energy products, including drinks, advertised to increase energy and mental performance, can cause bad clinical effects as well. Many energy product exposures were unintentional and occurred among young children, causing heart and breathing problems, seizures, and other clinical problems. Findings support the need for improved energy product regulation, child-resistant packaging, and caregiver information, according to the study authors.

"Lack of federal oversight has led to inconsistencies in the quality of dietary supplements, product mislabeling and contamination with other substances," said Henry Spiller, MS, D.ABAT, a co-author of the study and director of the Central Ohio Poison Center at Nationwide Children's. "Although the majority of these exposure calls did not result in serious medical outcomes, exposures to yohimbe and energy products can be dangerous, suggesting the need for child-resistant packaging, caregiver education and FDA regulation of these substances."

Data for this study were obtained from the National Poison Data System, which is maintained by the American Association of Poison Control Centers (AAPCC). The AAPCC receives data on calls to participating poison control centers that serve the US and its territories. Poison control centers receive phone calls through the Poison Help Line and document

information about the product, route of exposure, individual exposed, exposure scenario, and other data.

Provided by Nationwide Children's Hospital