How common are exposures to soluble film automatic dishwashing products in the UK? A retrospective UK National Poisons Information Service (NPIS) study of enquiries 2008-2014

Day RC,[1] Eddleston M,[2] Thomas SH,[3] Thompson JP,[4] Vale JA.[1]

[1]NPIS (Birmingham Unit), City Hospital, Birmingham, UK;
[2]NPIS (Edinburgh Unit), Royal Infirmary, Edinburgh, UK;
[3]NPIS (Newcastle Unit), Regional Drug and Therapeutics Centre, Newcastle, UK;
[4]NPIS (Cardiff Unit), University Hospital Llandough, Cardiff, UK.

Background

Concerns have been raised about the potential dangers of soluble film automatic dishwashing (ADW) tablets. These products, marketed for their ease of use, require no removal from an outer wrapper and have various appearances; some consist only of a powder while others also contain a liquid and/or gel component (Fig. 1).

The composition of the tablets most commonly contain a source of hydrogen peroxide in addition to sodium carbonate, sodium tripolyphosphate, non-ionic surfactants and enzymes. When dissolved in water, these products typically have a pH of between 9 and 11. The contents are contained within a water-soluble polyvinyl alcohol film, much like liquid laundry detergent capsules.

Fig. 1. Examples of traditional (top) and soluble film (bottom) ADW tablets

Objective

To determine the number of enquiries and exposures involving soluble film ADW tablets, referred to the UK NPIS between January 2008 and December 2014.

Methods

Telephone enquiries to the UK NPIS relating to soluble film ADW tablets were analysed. Data extracted from these enquiries included: age of patient; route(s) of exposure; source of enquiry; location of exposure; circumstances of exposure; product brand; features reported at the time of enquiry and the assigned WHO/IPCS/EC/EAPCCT Poisoning Severity Score (PSS).[1]

Results

There were 385 enquiries relating to 382 patients. Telephone enquiries were received predominantly from NHS 111/NHS Direct/NHS 24 (53.0%) which provide advice by telephone to the general public on health matters including toxic exposures, general practitioners including out-of-hours services (29.9%) and hospitals (9.9%).

The majority (92.9%) of patients were aged 5 years or less with the exposure occurring in the home in all but one of these cases. Exposure to these products occurred mainly as a result of ingestion (96.3%); eye contact (1.8%), skin contact (0.5%) and exposures involving multiple routes of exposure (1.3%) made up the remaining cases.

The PSS was known in 376 of 382 cases: overall 250 of 382 (65.4%) cases were asymptomatic (PSS 0), 125 had a PSS 1 (minor toxicity) and one had a PSS of 2 (moderate toxicity). No patient developed severe features of toxicity (PSS 3). Table 1 shows the PSS for each route of exposure.

Although the majority of patients remained asymptomatic following ingestion alone (65.8%), of those developing symptoms, vomiting was reported most commonly, occurring in around a quarter of cases (n=97). Nausea (n=7) and coughing (n=6) were also present and three patients developed a rash.

Route of exposure	PSS 0	PSS 1	PSS 2
Ingestion (n=368)	242 (65.8%)	125 (34.0%)	1 (0.2%)
Eye contact (n=7)	2 (28.6%)	5 (71.4%)	0 (0%)
Ingestion and skin contact (n=5)	4 (80.0%)	1 (20.0%)	0 (0%)
Skin contact (n=2)	1 (50.0%)	1 (50.0%)	0 (0%)

Table 1. PSS for each route of exposure

Conclusions

Exposure to soluble film ADW tablets only rarely resulted in clinically significant symptoms, which is surprising given the potential hazard of the material. Hence, it is probable that the amount of tablet actually ingested was small and most material was spat out.

Reference

1. Persson HE, Sjöberg GK, Haines JA, Pronczuk de Garbino J. Poisoning severity score. Grading of acute poisoning. J Toxicol Clin Toxicol. 1998; 36:205-213.