

## Suspected adverse reactions to herbal preparations

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The extensive commercialization of herbal medicinal products is accompanied by an increase in the number of potential adverse reactions (ARs) to them, raising concern on their safety (Posadzki et al., 2013). Well known are the cases of death events or permanent impairment associated with ephedra-containing products (Haller e Benowitz 2000), or of hepatotoxicity induced by kawa-kawa (Stickel et al., 2003). An issue in safety of herbal preparations is the lack of quality, particularly due to contamination and adulteration. Contamination is an emerging problem coming out from Asian herbal products, which often contain heavy metals (Genuis et al., 2012), microorganisms and aflatoxins (Efferth & Kaina, 2011). Of note are also the fatal cases of hepatotoxicity due to herbal slimming products adulterated with an analog of fenfluramine (N-nitrosofenfluramine) with known hepatotoxic effects (Yuen et al., 2006).

However, not all 'defendants' are always guilty, and some remarks are therefore necessary. The ARs to herbal preparations are often due to improper use or abuse. In this framework, various cases can be mentioned: 1.serious ARs of asthma to propolis-containing products in children with allergic predisposition (Menniti-Ippolito et al., 2008b); 2.a case of esophageal perforation after a preparation containing soluble fibres, in a patient affected by Schatzki ring (Vitalone et al., 2011); 3.various cases of impaired coagulation in patients taking warfarin or acenocoumarol in association with medicinal plants containing coumarins (well known inhibitors of platelet aggregation) (Paoletti et al., 2011);4.several cases of *pseudomelanosis coli* following *Cassia angustifolia* chronic consumption (the relationship with this effect and the chronic use of anthraquinones has been well established) (Vitalone et al., 2012). Safety of herbal preparations can be also compromised by procedures of extraction. In this context, the cases of hepatitis related to green tea consumption could be mentioned: in many cases patient used green tea extract containing high amount (>90%) of epigallocatechin gallate, not reachable with the traditional aqueous infusion (Mazzanti et al., 2009).

The safety of herbal preparations is monitored by the Phytosurveillance systems, that differ country by country. In Italy reports of suspected ARs can not be collected in the National Pharmacovigilance Network, and they are independently received by Poison Control Centers, sometimes by other agencies/institutions, and by the Italian Institute of Health. The latter Institution in the last eleven years, collected 819 ARs to herbal preparations (Menniti-Ippolito, 2013). This number appears little if compared to the widespread use of herbal products, however a considerable underreporting must be taken into account.

Adverse reactions to herbal preparations is an expanding problem, however most of these ARs are foreseeable and therefore avoidable using herbal products of quality and in a proper way. An active phytosurveillance that monitors the ARs, along with a better information to consumers, allow to improve the safety of herbal preparations.

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