

Quality of herbal raw material: A challenge

In a recent contribution, Daniel outlines important issues in complementary and alternative medicine (CAM)¹. Indeed, quality issues are a major problem in herbal medicine. Accidental or deliberate adulterations, or substitutions of species, are quite frequently found, and have, in some cases had an impact on the specifications as defined in official monographs. For example, according to our research, the European monographs on galbanum (*Ferula gummosa*) already include a certain number of adulterants, mainly from species such as *Ferula asafoetida* or *Dorema ammoniacum*². A new guideline of the WHO on Good Agricultural and Collection Practise begins to redress this situation, but there is still much to be done³. Companies that take herbal medicine seriously and do not only see CAM as a fashionable marketing opportunity, organize projects including cultivar selection and controlled collection in respect to cultivation.

As outlined by Daniel, the extraction method may also be a source of problems. It is now known that interactions caused by therapeutic administration of St. John's wort extracts (*Hypericum perforatum*) were in fact caused by artificial enrichment of the extract with hyperforin, while extracts low in hyperforin appear to be quite safe.

Daniel's example of liver toxicity from kava as a result of unsuitable extraction was, however, unfortunate. Kava is a traditional beverage in the island states of Oceania, produced from the roots of *Piper methysticum*. German-produced extracts of kava were safely used for decades, and demonstrated to be non-toxic and efficacious in numerous studies. These German extracts were only recently discussed under the premise of potential liver toxicity, whereas the traditional beverage is generally accepted as being safe. To date, there is still no consistent proof of a relevant toxicity of kava. The majority of the case reports (mainly from Germany) do not suggest kava as the causal factor in liver reactions. In only three case reports was kava established as the most probable cause of the incident. However, even were

all reports used as proof of the toxicity of kava, the incidence rate would still be below one case in more than 50 million kava users – by far lower than the rate of spontaneous liver disease⁴!

The suggestion of poor extraction methods used by Germany companies is compelling, but flawed. In countries of origin, kava is not, as Daniel points out, fermented, but produced as a cold-water suspension of resinous droplets containing mainly kavalactones. As was shown in numerous pharmacological assays and clinical trials, the kavalactones are responsible for the anxiolytic and relaxing effect of kava, in the traditional drink as well as in extract preparations. A 'detoxification' of kavalactones by Michael addition to endogenous glutathione^{5,6}, would not only lead to a loss of efficacy, but is also based on the wrong assumption of the kavalactones being the bearer of kava toxicity. The toxicity of kava in general, and of the kavalactones in particular, could, however, be excluded in toxicological studies⁷.

Although the theory of kavalactone detoxification by glutathione is obviously misleading, problems with kava may still in part be related to poor quality. As was demonstrated at the International Kava Congress in Suva, Fiji (1–2 December 2004), the huge demand for kava around 1998 led to a degradation of the quality of kava in the market⁸. Kava roots from cultivars for which there is no traditional use, due to locally known adverse effects, were exported, and in the case of one German producer, even selected for cultivation. A primary reason for this development was the long cultivation cycle of five years for good quality kava, whereas the poorer quality kava plants are generally very proliferative, and can be harvested after 1–2 years. The toxicological consequences of this development are still unclear⁹.

The conclusion from our experience and from the facts stated by Daniel is quite clear: If we want herbal products to be accepted as an integral part of medicine, we need to put greater effort into securing the opti-

mal quality herbal raw material. In the case of kava, corresponding measures are already being taken.

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