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Issues of quality, safety and efficacy of traditional herbal medicines with reported neuroprotective effects

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Abstract

In the Western world herbal medicine has been considered by many as unorthodox and yet an increasing proportion of the population turn to plants or mixtures of plant extracts for the relief of symptoms, for promotion of good health or in a curative mode. In some instances the herbal compound is used as a substitute for prescription medicines whilst in others it is used as an adjunct to prescription or other over the counter medicines (Tindle et al., 2005). Conversely, in the developing world herbal medicines continue to be the primary mode of health care with Traditional Chinese Medicine (TCM) being the most commonly practiced form of herbalism worldwide.

Whilst herbal medicines are viewed by some as a safer, more natural approach to therapeutics their sale is regulated via legislation in many countries including those of the European Union (EU) member states. In the United Kingdom the prescribing of herbal medicines has been statutorily regulated under section 12.1 of the Medicines Act since 1968 and the reporting of adverse reactions is required through the NIMH Yellow Card Scheme (MHRA, 2013 online). More recently EU legislation has been introduced to regulate the registration of herbs and their sale as over the counter products [Traditional Herbal Medicinal Products Directive (EU THMPD), 2004].

The quality of Traditional Medicines is affected by misidentification, adulteration, lack of standardisation, inappropriate labelling and contamination. Contamination of Traditional Medicines with trace elements has been the focus of many recent research studies (Shaw et al., 1997; Mohd Rasdi et al., 2013) and is considered in this present research study.

This research examined the quality, safety and *in vitro* efficacy of a selection of herbal medicines, including Indian Ginseng and Scutellaria Biacalensis (Boyle et al., 2010), with reported neuroprotective effects. The study evaluated the usefulness of a range of simple spectroscopic and more complex chromatographic techniques for qualitative and quantitative determinations, determined trace metal levels by inductively coupled plasma analysis and assessed the potential antioxidant effects using a rodent brain model.

The findings highlight the heterogeneity of Traditional Herbal medicines and illustrate some simple approaches to improving Quality Control approaches to address issues of standardisation; evaluate efficacy and synergistic effects *in vitro* and indicate facile approaches to improving the labelling of herbal medicines.

Biography

Susanne Boyle is qualified to Doctoral level with a strong background in Analytical Chemistry and xenobiotic metabolism.Post Doctoral award she held a number of Research and Devlopment positions within the Pharmaceutical industry through which she developed her skills and expertise in the development and validation of qualitative and quantitative chromatographic methods and spectroscopic techniques.

Her research interests include studies of the bioavailability and efficacy of antioxidants when presented through dietary, nutraceutical and traditional herbal medicines. Using a range of *in vitro* and *in vivo* studies she has examined the impact of selected antioxidants on biomarkers of oxidative stress and was a recipient of the American Oil Chemists' Society for the best quality paper in lipid oxidation and analysis. She continues to develop her multidisciplinary research interests through a number of national international collaborations.