EXTRACTABILITY OF POLYPHENOLS FROM LOCAL HERBS USING TRADITIONAL EXTEMPORANEOUS PREPARATIONS

Nicholas Rapa¹ Everaldo Attard², Anthony Serracino-Inglott³
¹Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta, Msida, Malta
²Rural Sciences and Food Systems, Institute of Earth Systems, University of Malta, Msida, Malta
email: nicholas.rapa.14@um.edu.mt

With the increasing consumption of herbal teas, a number of public health issues e.g. efficacy, safety and quality assurance have attracted concern.¹ Comprehensive phytochemical and pharmacological analysis is very crucial as a key step in determining the toxic effects of plant constituents in herbal infusions.² By studying the influence of various factors, such as time and temperature of extraction, on antioxidant activity and solid to liquid polyphenolic extraction can lead to more information on the efficient preparation of herbal teas.

INTRODUCTION

- To investigate the physicochemical properties of eight different locally available herbal tea infusions.
- To determine the polyphenolic content and antioxidant activity in relation to steep time and temperature.
- To investigate the heavy metal content in the herb material and herbal infusion using Microwave Plasma-Atomic Emission Spectrometry (MP-AES).

METHOD

A highly significant correlation was observed between colour intensity and anthocyanin content (r=0.958) and between anthocyanin content and flavonoid ratio (r=0.951).

An inverse correlation was observed between the content of polyphenols (with time & temperature) and LC50 in Melissa leaf tea (r=-0.964), Marticaria flower (r=-0.856) and Valerian root (r=-0.891). A greater antioxidant activity was present with a higher polyphenolic content in these herbal infusions.

As, Cu and Pb were the most abundant metals in both the herb material and infusion. Ag, Cd, Cr and Hg were present at lower quantities. Sn showed the highest extractability whilst the lowest extractability was exhibited by Ag, Cd and Hg.

RESULTS

Figure 3: Cumulative polyphenolic content with increasing temperature in all herbal tea infusions.

CONCLUSION

The presence of toxic metals, minerals and other constituents in herbal substances does not always imply that these will be present in the final infusion to the consumer. There is no common infusion formula or instruction for the time and temperature for the different herbal substances. Each herbal substance should be studied and evaluated individually.

Obtained results may contribute to investigate new ways of understanding the connection between natural products and disease prevention. Until more specific, clinically supported data is generated, herbal tea consumers will still be influenced by empirical evidence, traditional medicine practices and prior experiences when making their choices.

REFERENCES