

## Development and stability of phytocosmetics containing peruvian maca extract (*Lepidium meyenii*) (Walp).

Rebeca F. Gasmenga\*, Rodney A. F. Rodrigues.

### Abstract

The main objective of this work was the use of Peruvian Maca extract on the development of phytocosmetic formulations. From the three different varieties of *Lepidium meyenii* (yellow, black and red), aqueous and hydro-alcoholic extracts were prepared for the purpose of incorporation into the cosmetics formulations. The antioxidant activity of the extracts was evaluated by the DPPH method and the photoprotective effect was evaluated by the in vitro Mansur's method. The most promising extract was applied to the incorporation into toner and cream formulations, and their stability was evaluated. As a result, stable formulations were obtained.

### Key words:

Phytocosmetics, formulations, Peruvian Maca.

### Introduction

The use of natural actives, connected with the aesthetic concern aiming at a young appearance, has motivated the research and development of new cosmetic formulations that meet consumers' demand for more natural products. Medicinal plants, besides acting as raw material for herbal medicines, are also used in the elaboration of new products. In this context, plant-based cosmetics, fragrances and personal care products have increasingly attracted the market interest.

Maca has an important role in Peruvian popular medicine and studies corroborate its medicinal application pointing out its antioxidant potential and antiinflammatory activity, justifying its possible use in formulations for cosmetic use. There are three varieties of *Lepidium meyenii*, classified by color: red, yellow and black, as shown in Image 1.



**Image 1.** Varieties of Peruvian Maca (*Lepidium meyenii*): red, yellow and black.

The aim of this work is the development of stable phytocosmetic formulations containing extract of *L. meyenii* as well as the evaluation of photoprotective and antioxidant activity of these extracts in the maintenance of skin eudermia.

### Results and Discussion

Aqueous and hydro-alcoholic (30:70 v/v) extracts were obtained of dried yellow, red and black Peruvian Maca. The assays of the in vitro antioxidant (SILVA, 2013) and photoprotective (MANSUR, 1986) effects were performed. The extract with best result, presenting an elevated antioxidant potential, was the hydro-alcoholic extract of Red Maca. This extract also showed a promising photoprotective action.

Phytocosmetic formulations were developed: a facial toner with 4% extract and a facial cream with 1,5% extract. Image 2 shows some of the formulations developed.



**Image 2.** Cream incorporated with hydro-alcoholic extract of Red Maca and the pure cream formula.

The stability of the formulations was evaluated following the Cosmetic Products Stability Guide by the Brazilian National Health Surveillance Agency (ANVISA), through the Accelerated Stability Test.

Samples showed to be stable when its pH, centrifugation and organoleptic characteristics were analyzed.

### Conclusions

Special care is essential at every step of the process for the production of a quality phytocosmetic, from the precedence of the vegetal raw material, plant processing and good handling practices. The extract incorporated into the formulations developed provided antioxidant, photoprotective and healing effect to the formulated products, as well as the natural appeal that has been appreciated by consumers.

### Acknowledgement

The authors thank the CNPq for the financial support.

<sup>1</sup> MANSUR, J. S.; BREDER, M. N. R.; MANSUR, M. C. A.; AZULAY, R. D Determination of the solar protection factor by spectrophotometry. *An. Bras. Dermatol.*, v. 61, p. 121-124, 1986.

<sup>2</sup> SILVA, C. E. L.; VALOTA, R.; GEBARA, K. S.; SILVA, R. C. L; SIMIONATTO, E. Avaliação da atividade antioxidante e teor de compostos fenólicos em extrato metanólico obtido de folhas da *Commiphora Myrrha*. *Semina: Ciências Exatas e Tecnológicas, Londrina*, v. 34, n. 1, p. 117-124, 2013.