Antioxidant and antimicrobial activities of the phenolic extract from *Rubus rosaefolius* and *Malpighia emarginata*

Brígida D' Ávila Oliveira[1], Jason Guy Taylor[2], Michele Corrêa Bertoldi[3], Uelinton Manoel Pinto[4]

[1]Escola de Nutrição. Universidade Federal de Ouro Preto. Ouro Preto – MG. 35400-000

[2]Departamento de Química. Universidade Federal de Ouro Preto. Ouro Preto – MG. 35400-000

[3]Universidade Federal de Juiz de Fora, Departamento de Farmácia. Av. Doutor Raimundo Monteiro Rezende. Governador Valadares – MG. 35010-177

[4]Departamento de Alimentos e Nutrição Experimental. Faculdade de Ciências Farmacêuticas. Universidade de São Paulo. Av. Prof. Lineu Prestes, 580 B.14. São Paulo - SP. 05508-900

Fruits and vegetables significantly contribute to a healthy diet due to the presence of macro and micronutrients that additionally to the nutritive benefits also present antioxidant activities contributing in the protection against chronic non transmissible diseases. Among these nutrients, phenolic compounds can present antimicrobial activity which is highly important for the food industry since microbial deterioration and food safety have huge economical and health implications. The search for natural compounds with antimicrobial activity has escalated due to consumer perception of synthetic antimicrobials as detrimental to health. The objectives of this work were to extract, quantify and determine the antioxidant and antimicrobial activities of phenolic extracts from *Rubus rosaefolius* (morango silvestre) and *Malpighia emarginata* (acerola). The phenolic compounds were extracted from pulps of both fruits by solid phase extraction and quantified by the Folin-Ciocalteu method, expressed as mg of galic acid equivalent per liter (mg GAE/L). The antioxidant activity was determined by the DPPH and ABTS methods and the antimicrobial potential was evaluated by the well diffusion and minimum inhibitory concentration (MIC) assays against *Aeromonas hydrophila, Escherichia coli, Hafnia alvei, Pseudomonas aeroginosa, Pseudomonas fluorescens, Salmonella spp, Bacillus cereus, Listeria monocytogenes* and *Staphylococcus aureus.* The phenolic extract from *R. rosaefolius* contained 5,902.89 mg GAE/L and from *M. emarginata* 5,848.74 mg GAE/L, confirming the high content of phenolics in these fruits. The antioxidant activity, as determined by the DPPH method, was 120.88 ± 1.51 µM trolox/g of fruit for *R. rosaefolius* and 147.9 ± 8.15 µM trolox/g of *M. emarginata* fruit. The ABTS method presented similar results with 162.4 ± 5.6 µM trolox/g for *R. rosaefolius* and 128.17 ± 6.6 µM trolox/g of *M. emarginata.* Despite the similar amounts of phenolic compounds and antioxidant activity, *M. emaginata* was unable to inhibit any of the tested bacteria in the well diffusion assay while all strains were inhibited by *R. rosaefolius* extract. The determination of the MIC further confirmed the higher inhibitory effect of *R. rosaefolius* extract. The dissimilarities in the inhibitory potential are likely related to differences in the phenolic composition of both fruits indicating that further studies are needed in order to identify which compounds are responsible for the observed microbial inhibition.

Palavras-chave: phenolic compounds, antimicrobial activity, antioxidant activity, morango silvestre, acerola.

Agências Financiadoras: CNPq