

Anti-inflammatory and antioxidant activities of *Rheedia brasiliensis* fruit peel essential oil and relationships with its chemical composition

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Introduction

A wide variety of biologically active compounds from Guttiferae family have been extensively investigated, mainly polyisoprenylated benzophenones, biflavonoids and xanthenes.¹ However, a few works have been carried out with essential oils although its biological properties. In this way, this work sought to determine the fruit peel essential oil composition of *Rheedia brasiliensis* (Mart.) Planch. & Triana, a *Rheedia* specie largely found in Brazil, and to investigate the anti-inflammatory, antioxidant and reducing powers of this essential oil through rat paw edema model, scavenging activity of DPPH• free radical and classical ferric chloride method, respectively.

Results and discussion

The yield of *R. brasiliensis* fruit peel essential oil was 0.41% w/w, and the major component was γ -muurolene (10.27%), followed by spathulenol (8.71%), δ -cadinene (8.26%), torreyol (7.99%), α -cadinol (6.99%), cadalene (6.35%) and γ -cadinene (5.33%).

The rat paw edema data revealed that the inflammatory process inhibition was of $25 \pm 5\%$ ($p < 0.01$, Tukey-Kramer) at the third hour, when the animals have taken 1 mL of solution containing *R. brasiliensis* fruit peel essential oil (100 mg.kg^{-1}). Meanwhile, the indomethacin (positive control) was capable of inhibit the edematogenic pathology in $41 \pm 2\%$, ($p < 0.001$, Tukey-Kramer), also in the third hour (Figure 1).

At Figure 1, using the DPPH• radical, at the concentrations of 25, 50, 100 and 200 mg.L^{-1} , essential oil scavenging capacity was statistically lower than the comparative standard (ascorbic acid) one ($p < 0,05$) in all concentrations. In the classical ferric chloride method,² the strong reducer BHT presented absorbance data much higher in comparison to the essential oil ($p < 0,05$).

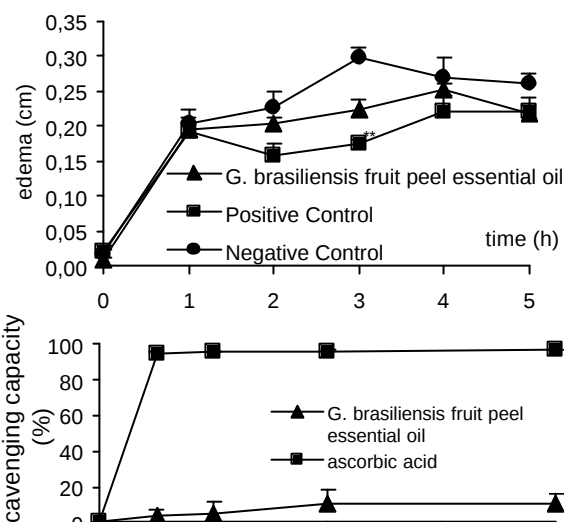


Figure 1 Anti-inflammatory (above) and scavenging (below) activities of *Rheedia brasiliensis* fruit peel essential oil.

Conclusions

The *R. brasiliensis* fruit peel essential oil presents anti-inflammatory potential, and the biological data ruled out the possibility of this activity to be related to inhibition of reactive oxygen species. In addition, the oil maybe involved in the inhibition of the prostaglandins synthesis by COX. However, further experiments will be required in order to prove such evidences.

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² Yen, G. H. and Chen, H. Y. *J. Agric. Food Chem.* **1995**, 43, 27-32