



# ANTIOXIDANT POTENTIAL OF SWEET BASIL (*OCIMUM BASILICUM* L.) EXTRACT IN RATS



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## Introduction

The interest in a natural and healthy lifestyle has moved the functional food under the spotlight. Basil (*Ocimum basilicum* L.) is one of the most important industrial and pharmaceutical crop species from Lamiaceae family having a major application in the food, pharmaceutical and cosmetic industries. It exhibits strong antioxidant activity due to high content of phenolic and flavonoid compounds. It is most commonly used in the form of teas, essential oils, liquid extracts, and as a spice and has an important application in the food, pharmaceutical and cosmetic industries. The aim of this research was to examine the effects of pre-treatment with basil extract on acetaminophen-induced acute liver injury in rats.



## Methodology

Total phenolic and flavonoid contents were tested by spectrophotometric methods. For the chemical characterization of basil extracts, an appropriate high performance liquid chromatography (HPLC) method was applied. Effects of basil extract on oxidative stress parameters were determined in an in vivo model of acetaminophen-induced liver injury in 24 Wistar rats.

## Results

Total phenolic content was  $52.61 \pm 1.35$  mg GAE/g of DE and flavonoid content was  $0.5 \pm 0.2$  mg QE/g of DE. Basil extracts contain chlorogenic, p-hydroxybenzoic, caffeic, ferulic, vanilic, rosmarinic and cinnamic acid, quercetin and naringenin. IC<sub>50</sub> values ranged from 0.22-45.76 µg/ml for DPPH radical, OH radical, H<sub>2</sub>O<sub>2</sub> and lipid peroxidation. The extract lowered the intensity of lipid peroxidation and potentiated the activity of antioxidant enzymes, with statistically significant increase in catalase ( $p < 0.01$ ), glutathione reductase ( $p < 0.05$ ), glutathione transferase activities ( $p < 0.05$ ), except for glutathione peroxidase activity.

Table 1. Chemical characterisation of basil extract

Compound	Content (mg/g of of dry extract)
chlorogenic acid	0.16505
p-hydroxybenzoic acid	0.14099
caffeic acid	0.09546
vanillic acid	0.04568
ferulic acid	ND
rosmarinic acid	0.18373
cinnamic acid	0.18331
rutin	ND
quercetin	4.77174
naringenin	0.18171

ND - non detected

Table 2. IC<sub>50</sub> values in different assays

Assay	IC <sub>50</sub> (µg/ml)
DPPH radical scavenging	0.22±0.01
lipid peroxidation inhibition	45.76±1.54
hydroxyl radical scavenging	14.19±1.03
peroxide radical scavenging	2.74±0.16

## Conclusion

The obtained results indicate that basil extract, produced by a simple, convenient, and widely accessible mode of extraction, easily done without any sophisticated equipment, exhibits several beneficial properties. In addition to high antioxidant in vitro activity, the present study demonstrated significant in vivo antioxidant potential of aqueous basil extract in a model of acetaminophen induced liver injury. Antioxidant effects were apparent though the increase in the activity of antioxidant enzymes and decreased lipid peroxidation.

