CARPATHIAN JOURNAL OF FOOD SCIENCE AND TECHNOLOGY

journal homepage: **http://chimie-biologie.ubm.ro/carpathian_journal/index.html**

# A COMPARATIVE STUDY ON ANTIOXIDANT AND INHIBITORY EFFECT OF RAW AND BOILED GINGER (*ZINGIBER OFFICINALE* ROSCOE) ON FERROUS SULPHATE INDUCED OXIDATIVE STRESS IN RAT'S TESTES – *IN VITRO*

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https://doi.org/10.34302/crpjfst/2024.16.2.6

**Article history:**
**Received:** May 24th, 2023
**Accepted**: June 23rd, 2024

**Keywords:**
*Ginger;*
*Oxidative stress;*
*Antioxidant and thermal processing.*

**ABSTRACT**

It is believed that oxidative stress in the male germ line affects male fertility and has an impact on typical embryonic development. So far, the comparative antioxidant potencies and inhibitory effect between raw and boiled ginger have not been studied in detail and reported. Accordingly, this study aimed at evaluating and comparing the effects of ginger rhizome extracts on pro-oxidant-induced oxidative stress in rat's testes whilst reflecting on the total phenolic content, total antioxidant capacity and total flavonoid content of the extracts. After preparing the raw and boiled ginger's aqueous extracts, the antioxidant activities of the extracts were assessed by means of a spectrophotometric method, and HPLC was used to characterize the extracts. The result of HPLC characterization of these extracts reveals that chlorogenic acid, coumarin, gallic acid, caffeic acid, catechin, shogaol, gingerol, gingerenone, quercitrin, quercetin, kaempferol, and rutin are the major constituents of these extracts. Also, the result revealed that both extracts of ginger rhizome investigated in this study brought about a concentration-dependent decrease in the level of malondialdehyde (MDA) associated with $FeSO_4$- stressed testes homogenates. In addition, the extracts exhibited concentration-dependent NO, OH, DPPH, and ABTS radicals' scavenging abilities. The result of this study also showed that compared to raw ginger extract, boiled ginger extract has a considerably ($p < 0.05$) higher total phenolic content. The high levels of quercetin in these ginger extracts may be the cause of their possible antioxidative effects, and their capacity to scavenge free radicals may be the mechanism by which these potentials are effected. Aqueous extracts of ginger rhizome could be considered as good antioxidant therapeutic candidates for oxidative stress linked with male infertility.