

Ginger varieties (*Zingiber officinale*) inhibit key enzyme linked to hypertension (Angiotensin-I converting enzyme) and some pro-oxidants induced lipid peroxidation in rat heart: *In vitro*

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Ginger has reportedly been used in folk medicine for the management/prevention of hypertension and other cardiovascular diseases. Therefore, this present study sought to investigate the inhibitory effect of aqueous extracts of two varieties of ginger on key enzyme linked to hypertension (Angiotensin-I Converting Enzyme ACE), and pro-oxidants [Fe^{+2} and sodium nitroprusside (SNP)]-induced lipid peroxidation in rat's isolated heart in vitro. Aqueous extracts (1:20 w/v) of red ginger (*Z. officinale* var. Rubra) and white ginger (*Z. officinale* Roscoe) were prepared and the ability of the extracts to inhibit ACE, and Fe^{2+} and SNP-induced lipid peroxidation in rat's heart in vitro was determined. The results revealed that both extracts inhibited ACE in a dose dependent manner (0.025-0.125 mg/mL). However, red ginger ($\text{EC}_{50} = 0.027$ mg/mL) extract had a significantly ($P < 0.05$) higher inhibitory effect on ACE than that of white ginger ($\text{EC}_{50} = 0.087$ mg/mL) extract. Furthermore, incubation of the rat's heart in the presence of Fe^{+2} and SNP caused a significant increase ($P < 0.05$) in the malondialdehyde (MDA) content of the heart homogenates while the introduction of the ginger extracts (0.078-0.313 mg/mL) caused a dose-dependent decrease in the MDA content of the stressed heart homogenates. However, these protective properties of the ginger varieties could be attributed to their polyphenol contents. Thus, the possible mechanism through which ginger exert its antihypertensive properties could be through inhibition of ACE activity and prevention of lipid peroxidation in the heart. Nevertheless, red ginger showed stronger inhibition of ACE than white ginger.

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