Journal of Basic & Clinical
PATHOPHYSIOLOGY

Vol. 7, Supplement 1, Autumn-Winter 2019-2020
p-ISSN: 2322-1895 e-ISSN: 2345-4334

Proceedings of

24th Iranian and 3rd International Congress of

Physiology and Pharmacology

(FAOPS Satellite Congress)

30 Oct - 01 Nov 2019

Shahed University, Tehran, Iran

A Semiannual Publication of
Shahed University

In the Name of GOD

24th Iranian 3rd International Congress of Physiology and Pharmacology

2019 FAOPS Satellite Congress

30 Oct- 01 Nov 2019

Tehran, Iran

Organized by: Shahed University in collaboration with Iranian Society of Physiology and Pharmacology

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Crocin attenuates oxidative stress and inflammation in myocardial infarction induced by isoprenaline via the PPARγ pathway in diabetic rats

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Background and Objectives: Hyperglycemia induced oxidative stress and inflammation resulting in development of diabetic cardiomyopathy. The current study investigated the involvement of PPARγ activation in effects of crocin as a natural carotenoid in cardiac infarction in diabetic rats.
Materials and Methods: Diabetes was induced in male wistar rats by streptozotocin (STZ) injection after the administration of nicotinamide. Then saline, crocin and GW9662 were injected for 28 days. Isoprenaline (ISO) was administrated on 27th and 28th days for induction of myocardial infarction.
Results: Isoprenaline and STZ reduced antioxidant enzymes content in myocardial tissue and increased inflammation and lipid peroxidation, while crocin significantly decreased lipid peroxidation and inflammatory cytokines levels and also improved cardiac injury marker level and antioxidant capacity. However, GW9662 (PPARγ antagonist) administration reversed the positive effects of crocin
Conclusion: The results indicated the involvement of PPARγ pathway in the cardioprotective effects of crocin.
Keywords: Crocin, Myocardial Infarction, Inflammation, Isoprenaline, PPARγ

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Ellagic Acid Improves Testis Weight Following Isoproterenol-Induced Myocardial Infarction in Diabetic Male Rats

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Background and objective: Several diseases interfere with spermatogenesis including diabetes mellitus (DM), coronary heart disease, and chronic liver diseases. Diabetes mellitus has adverse effects on the fertility of diabetic patients; for instance, it causes abnormal spermatogenesis with sperm deformities and decreases testis weight. The purpose of this study was to evaluate the effects of ellagic acid on testis weight following isoproterenol-induced myocardial infarction in diabetic male rats.
Materials and methods: Male Wistar rats (295±25 g) were randomly divided into 5 experimental groups (n=10, each). The first group was the non-diabetic control. Diabetes mellitus was induced in all other groups using streptozotocin (55 mg/kg, i.p.). Group II the diabetic control. Group III was gavaged with ellagic acid (50 mg/kg) for 21 days. Myocardial infarction was induced in groups IV and V via injection of isoproterenol (100 mg/kg, i.p.) for two consecutive days. However, group V was further treated with ellagic acid (50 mg/kg) for 21 days. On day 21, testis weights were recorded in all rats.
Results: Streptozotocin caused significant reductions in testis weights in all diabetic groups ($p<0.05$). Co-administration of ellagic acid significantly increased this parameter in both infarcted and non-infarcted groups ($p<0.05$).
Conclusion: This study suggests beneficial effects for ellagic acid in improving testis weights in diabetic male rats. This effect seems to be independent of myocardial infarction.
Keyword: ellagic acid, isoproterenol, myocardial infarction, diabetic, testis weight