

The protective effect of silymarin on oxidative stress induced by acrolein in heart of mice

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Background and Aims: Acrolein (CH₂=CH-CHO) is a ubiquitous pollutant in the environment. It is produced from carbohydrates, vegetable oils and animal fats, amino acids during heating of foods, and by combustion of petroleum fuels and biodiesel. In this study, the effects of silymarin against oxidative stress induced by acrolein in heart of mice were studied.

Methods: The mice were divided into 7 groups consisted of 6 mice in control (normal saline plus 0.5% w/v methylcellulose), acrolein (7.5 mg/kg), silymarin (25, 50 and 100 mg/kg) plus acrolein, vitamin E (100mg/kg) plus acrolein and silymarin (100 mg/kg) groups. Mice were received acrolein (7.5mg/kg) by gavage once a day for 3 weeks. Vitamin E was injected intraperitoneally to mice three times per week and silymarin + acrolein groups received silymarin 7 days before acrolein and daily thereafter throughout the study (21 days). Malonaldehyde (MDA) level, total – SH groups, tissue antioxidant enzyme (catalase activity and superoxide dismutase activity in heart tissue were assessed at the end of treatment.

Results: There was a statistically increase in MDA levels and decrease in total – SH groups, tissue antioxidant enzyme (catalase activity and superoxide dismutase activity in acrolein treated groups in compare to the control group (P<0.05). Silymarin and vitamin E prevented the toxic effect of acrolein in heart tissue.

Conclusions: The present results demonstrated acrolein induced oxidative stress in heart tissue and silymarin and vitamin E could prevent acrolein induced oxidative stress in heart.

Keywords: Silymarin; Acrolein; Oxidative stress; Malonaldehyde; Antioxidant enzyme