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Green tea extract supplement inhibition of HMGB1 release in rats exposed to cigarette smoke
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Abstract

Tobacco-smoke exposure is linked to carcinogenic, oxidative and inflammatory cellular reactions. Green tea has been reported to have anti-release properties against various pro-inflammatory cytokines. To determine the effects of green tea extract (GTE) on serum high mobility group box-1 (HMGB1) levels in rats exposed to cigarette smoke (CS), we divided rats into 4 treatment groups: (1) CS only, (2) dietary supplement with GTE (3 mg/d) and CS (GCS1), (3) dietary supplement with GTE (4.5 mg/d) and CS (GCS2) and (4) a control group. HMGB1 and cotinine serum levels were analyzed by ELISA. The average serum HMGB1 level in the CS group was significantly higher than the other groups ($p < 0.01$), indicating the release of HMGB1 into the blood was stimulated by CS exposure, while GTE consumption suppressed HMGB1 levels. Rats exposed to CS had an average serum cotinine level of 37 ng/ml, indicating tobacco related compounds were present in the rats' blood. However, treatment with GTE did not reduce cotinine levels in all groups. Cotinine stimulated HMGB1 secretion in a dose- and time-dependent manner, and HMGB1 levels were suppressed by GTE in murine macrophage cell lines. Our results show GTE supplementation may offer beneficial systemic effects and suppress HMGB1 by protecting against cell inflammation.

Author Keywords

Cigarette smoke; Green tea; HMGB1

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