**Résumé:**

We investigate the effects of green tea extract (GTE) on the attenuation of nicotine hematotoxicity, oxidative stress, inflammation and spleen and bone marrow structural lesions. Rats were treated by injecting nicotine (1,5mg/kg b.w. for 7 weeks) intraperitoneally and thereby supplementing GTE 2% orally to them. Haematological profiles, inflammation markers, neutrophil/lymphocyte (NLR), platelet/lymphocyte (PLR) and mean platelet volume (MPV/Plat) ratios- and erythrocyte sedimentation rate (ESR) were evaluated. Splenic levels of malondialdehyde (MDA), nitric oxide (NO), advanced protein oxidation products (AOPP) and catalase activity were measured. Femur bone and spleen were subjected to histological study. Nicotine-induced haematological abnormalities, a rise in the NLR and MPV/Plat ratios and ESR values with a drop in the PLR values compared to other experimental groups and leads to a significant increase in MDA, NO and AOPP levels-with a decrease in catalase activity compared to control groups. The bone marrow and spleen of nicotine exposed rats showed severe degenerative changes. GTE supplementation attenuates hematotoxicity, induce a decrease in the inflammation markers values, improved the levels of MDA, NO, AOPP and catalase activity and attenuate the adverse histological effects. GTE rich on polyphenols and flavonoids revealed by the in vitro study protects against the hazardous effects of nicotine.