On the mechanism of thyroid hormone-induced respiratory burst activity in rat polymorphonuclear leukocytes

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Administration of single doses of 0.1 mg L-triiodothyronine (T3)/kg for 3 consecutive days to fed rats produced a drastic increase in the respiratory burst activity of isolated polymorphonuclear leukocytes (PMN), stimulated with serum-opsonized zymosan. This effect was evidenced by the 3.8-fold increment in the integrated chemiluminescence, and seems to be primarily related to the enhanced activity of NADPH oxidase elicited by T3 treatment, with the observed higher myeloperoxidase activity playing a contributory role. In these conditions, hyperthyroidism determines a net enhancement in the oxidant capacity of PMN, as the increased rate of O2 - generation found occurs in the absence of changes in the activity of superoxide dismutase.