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EXPOSURE TO ACETAMIDE-BASED COMPOUNDS IS A RISK FACTOR OF ACUTE HEPATIC INFLAMMATION

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Introduction Acetamide-based compounds widely used in industries and their toxic effect have not been studied. Thioacetamide (TAA) is widely used in industry and is known to be a hepatotoxicants in experimental animals. However, the mechanism underlying TAA-induced acute inflammation is still unclear. The authors investigated the mechanisms and the involvement of main TAA metabolites in acute hepatic inflammation induced by TAA-in rats.

Methods Acute hepatic inflammation was induced by TAA (0, 10, 30 and 100 mg/kg, intraperitoneally), while the inflammatory indicators including cytokines and nitric oxide were determined 0, 1, 3, 6 and 12 h after TAA administration. Hepatic pro-inflammatory cytokines were measured quantitatively using ELISA. SKF525A (cytochrome P450 2E1 (CYP 2E1) inhibitor) were used to examine the role of cytochrome in TAA-induced acute hepatic inflammation. In addition, TAA-S-oxide and acetamide were also used to examine the involvement of TAA metabolites in the early stage of TAA-induced hepatic inflammation.

Results TAA increased, within 6 h, hepatic tumour necrosis factor-aproduction, interleukin 1b, nitrite levels, inducible nitric oxide synthase expression and myeloperoxidase activity. CYP 2E1 inhibitors showed significant inhibition of tumour necrosis factor α, interleukin 1β, nitrite, and myeloperoxidase activity after TAA treatment. In addition, acetamide, but not TAA-S-oxide, increased myeloperoxidase activity and all tested proinflammatory mediators generation.

Conclusion The authors conclude that acetamide-associated neutrophil activation is involved, at least partially, in TAA-induced hepatic inflammation. Further, exposure to acetamide-based compounds may be a risk factor of acute hepatic inflammation.

Competing interests None.

Keywords acetamide, hepatic inflammation, inflammatory cytokine, neutrophil infiltration, nitric oxide, thioacetamide.