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Hepatoprotective Assessment of L-Ascorbate 1-(2-Hydroxyethyl)-4,6-Dimethyl-1, 2-Dihydropyrimidine-2-on in Toxic Liver Damage Test

Authors : Vladimir Zobov, Nail Nazarov, Alexandra Vyshtakalyuk, Vyacheslav Semenov, Irina Galyametdinova, Vladimir Reznik

Abstract : The aim of this study was to investigate hepatoprotective properties of the Xymedon derivative L-ascorbate 1- (2-hydroxyethyl)-4,6-dimethyl-1,2-dihydropyrimidine-2-one (XD), which exhibits high efficiency as actoprotector. The study was carried out on 68 male albino rats weighing 250-400 g using preventive exposure to the test preparation. Effectiveness of XD win comparison with effectiveness of Xymedon (original substance) after administration of the compounds in identical doses. Maximum dose was 20 mg/kg. The animals orally received Xymedon or its derivative in doses of 10 and 20 mg/kg over 4 days. In 1-1.5 h after drug administration, CCl4 in vegetable oil (1:1) in a dose of 2 ml/kg. Controls received CCl4 but without hepatoprotectors. Intact control group consisted of rats, not receiving CCl4 or other compounds. The next day after the last administration of CCl4 and compounds under study animals were dehematized under ether anesthesia, blood and liver samples were taken for biochemical and histological analysis. Xymedon and XD administered according to the preventice scheme, exerted hepatoprotective effects: Xymedon — in the dose of 20 mg/kg, XD — in doses of 10 and 20 mg/kg. The drugs under study had different effects on liver condition, affected by induction with CCl4. Xymedon had a more pronounced effect both on the ALT level, which can be elevated not only due to destructive changes in hepatocytes, but also as a cholestasis manifestation, and on the serum total protein level, which reflects protein synthesis in liver. XD had a more pronounced effect on AST level, which is one of the markers of hepatocyte damage. Lower effective dose of XD — 10 mg/kg, compared to Xymedon effective according to, and its pronounced effect on AST, the hepatocyte cytolysis marker, is indicative of its higher preventive effectiveness, compared to Xymedon. This work was performed with the financial support of Russian Science Foundation (grant No: 14-50-00014).

Keywords : hepatoprotectors, pyrimidine derivatives, toxic liver damage, xymedon
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