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Comparative Evaluation of Hepatoprotective Activity of Xymedon Preparation Derivatives with Ascorbic Acid and Methionine

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Abstract The main objective of this work was a comparative evaluation of hepatoprotective activity of pyrimidine derivative of the active compound of Xymedon (1-(ß-oxyethyl)-4.6-dimethyl-1.2-dihydro-2-oxopirimidon) and its derivatives with methionine and ascorbic acid. The experiment was conducted on nonlinear white rats of both sexes based on the model of toxic damage inflicted on liver by CCl_4 with prophylactic scheme. The compounds were injected at doses of 1/500 LD_{50} (13 mg/kg for Xymedon and 11 mg/kg for its derivatives with ascorbic acid and methionine). The study showed that, out of the three compounds considered, the Xymedon derivative with ascorbic acid had the most prominent hepatoprotective properties, as, given the CCl_4 poisoning, it caused the greatest decrease of liver damage area (by a factor of 3.25 over control) and change of the largest number of biochemical markers towards normalization. The Xymedon derivative with methionine had less prominent hepatoprotective properties than both the derivative with ascorbic acid and Xymedon itself.

Keywords Toxic hepatitis · Liver injure · Carbon tetrachloride · Pyrimidine derivatives · Hepatoprotective agents · Hepatoprotector

1 Introduction

As the incidence of liver diseases is increasing, researches aimed to discover effective hepatoprotective medication are getting ever more relevant. The best known drugs among other hepatoprotectors are based on plant matters, such as silymarin or essential phospholipids [1, 2]. Contemporary literature includes a wide range of researches aimed to discover new hepatoprotectors among plant extracts and natural compounds [3]. Synthetic hepatoprotective agents are less known. For instance, these include a drug called Thiotriazoline. There is not much reported information about the hepatoprotective activity of pyrimidine derivatives; however, this group of compounds commands attention due to their property to stimulate tissue regeneration. There are some works describing mild hepatoprotective properties of uracil derivatives (methyluracil, 4-methyl-5-oxymethyluracil) [4, 5], as well as hepatoprotective properties of synthetic derivatives of 2,4-dioxo-5-arylidenimino-1,3-pyrimidines [6]. We have previously obtained the results on hepatoprotective activity of a Russian pyrimidine derivative-based drug, Xymedon [7], and its derivative with ascorbic acid [8]. Moreover, we have obtained results proving the actoprotective [9, 10] and neuroprotective [11] activity of Xymedon derivatives.

The main idea of the synthesis of drug Xymedon derivatives with biogenic molecules is improvement of hepatoprotective properties. As biogenic acids, we used ascorbic acid, a

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