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The Protective Effect of Vitamin C and Silymarin Against Acetaminophen Induced Hepatotoxicity in Rats Model

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SUMMARY. **Acetaminophen, often known as Paracetamol, is the most frequently used medication as an anti-pyretic and pain reliever in the world. It has been available as over-the-counter preparations since 1955 and can be used in any of the three levels of pain severity, according to WHO guidelines. With few therapy options, acetaminophen-induced liver damage is becoming more commonplace each year. As a result, one of the most frequent causes of poisoning worldwide is acetaminophen intoxication. In the current in vivo study, 4 groups each of 6 male rats were used to examine the ability of a single daily oral doses of selected vitamins (500 mg/kg/day of vitamin C and 100 mg/kg/day of Silymarin to act as an antioxidant against hepatotoxicity caused by acetaminophen. With the aid of inhaled chloroform anesthesia, blood samples and liver specimens were obtained on the day sixteenth of experiment, liver function evaluation was by biochemical and histopathological analysis. The treatment with acetaminophen using gavage feeding needles caused a considerable increase in the serum ALT, AST, ALP, and TSB levels in addition to high degree histopathological necrosis, severe tubular congestion, and cytoplasmic disintegration indicating hepatotoxicity in animal group received acetaminophen only. However, these abnormalities were somewhat reversed in ascorbic acid-pretreated rats, and the livers of rats given both ascorbic acid and Silymarin were greatly protected as a result of their synergistic effects on the hepatic cells. As an outcome, the findings of this study demonstrated that either singly or in combination, ascorbic acid 500 mg/kg/day and Silymarin 100 mg/kg/day can protect against acetaminophen-induced hepatotoxicity by their antioxidant effects and free radicals scavenging and/or free radicals production preventing actions.**

RESUMEN. Acetaminophen, often known as Paracetamol, is the most frequently used medication as an anti-pyretic and pain reliever in the world. It has been available as over-the-counter preparations since 1955 and can be used in any of the three levels of pain severity, according to WHO guidelines. With few therapy options, acetaminophen-induced liver damage is becoming more commonplace each year. As a result, one of the most frequent causes of poisoning worldwide is acetaminophen intoxication. In the current in vivo study, 4 groups each of 6 male rats were used to examine the ability of a single daily oral doses of selected vitamins (500 mg/kg/day of vitamin C and 100 mg/kg/day of Silymarin to act as an antioxidant against hepatotoxicity caused by acetaminophen. With the aid of inhaled chloroform anesthesia, blood samples and liver specimens were obtained on the day sixteenth of experiment, liver function evaluation was by biochemical and histopathological analysis. The treatment with acetaminophen using gavage feeding needles caused a considerable increase in the serum ALT, AST, ALP, and TSB levels in addition to high degree histopathological necrosis, severe tubular congestion, and cytoplasmic disintegration indicating hepatotoxicity in animal group received acetaminophen only. However, these abnormalities were somewhat reversed in ascorbic acid-pretreated rats, and the livers of rats given both ascorbic acid and Silymarin were greatly protected as a result of their synergistic effects on the hepatic cells. As an outcome, the findings of this study demonstrated that either singly or in combination, ascorbic acid 500 mg/kg/day and Silymarin 100 mg/kg/day can protect against acetaminophen-induced hepatotoxicity by their antioxidant effects and free radicals scavenging and/or free radicals production preventing actions.

KEY WORDS: acetaminophen, antioxidant, hepatotoxicity, silymarin, vitamin C.

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