Effects of nanocellulose fiber and thymol on mechanical, thermal, and barrier properties of corn starch films

ABSTRACT

Nerol, a monoterpene is evident to possess diverse biological activities, including antioxidant, anti-microbial, anti-spasmodic, anthelmintic, and anti-arrhythmias. This study aims to evaluate its hepatoprotective effect against paracetamol-induced liver toxicity in a rat model. Five groups of rats (n = 7) were orally treated (once daily) with 0.05% tween 80 dissolved in 0.9% NaCl solution (vehicle), paracetamol 640 mg/kg (negative control), 50 mg/kg silymarin (positive control), or nerol (50 and 100 mg/kg) for 14 days, followed by the hepatotoxicity induction using paracetamol (PCM). The blood samples and livers of the animals were collected and subjected to biochemical and microscopical analysis. The histological findings suggest that paracetamol caused lymphocyte infiltration and marked necrosis, whereas maintenance of the normal hepatic structural was observed in group pre-treated with silymarin and nerol. The rats pre-treated with nerol significantly and dose-dependently reduced the hepatotoxic markers in animals. Nerol at 100 mg/kg significantly reversed the paracetamol-induced altered situations, including the liver enzymes, plasma proteins, antioxidant enzymes and serum bilirubin, lipid peroxidation (LPO) and cholesterol [e.g., total cholesterol (TC), triglycerides (TG), high-density lipoprotein cholesterol (HDL-c), low-density lipoprotein cholesterol (LDL-c)] levels in animals. Taken together, nerol exerted significant hepatoprotective activity in rats in a dose-dependent manner. PCM-induced toxicity and nerol induced hepatoprotective effects based on expression of inflammatory and apoptosis factors will be future line of work for establishing the precise mechanism of action of nerol in Wistar albino rats.

Keyword: Monoterpene; Nerol; Rattus norvegicus; Paracetamol; Liver damage