Hepatobiliary abnormalities have been described in patients with chronic inflammatory bowel diseases. The underlying pathogenic mechanisms may include gut-derived toxin, but remain uncertain. The aim of the present study is to assess the causation between colitis and liver metabolic capacity. Rats were treated intracolonically with 100 mg/kg trinitrobenzene sulfonic acid (TNBS) dissolved in 30 % ethanol. Homogenates of colonic mucosa and liver microsomes of the rats were prepared. Cytochrome P450 (P450) isozyme contents of the microsomes were measured by immunoblotting and enzyme activities of corresponding P450 isozymes were determined. Myeloperoxidase activity in colonic mucosa increased with time and reached maximum three days after administration of TNBS. The CYP3A2 and CYP2C11 protein contents were decreased by the treatment with TNBS along with their enzyme activities testosterone 6β- and 16α-hydroxylations, respectively. Phenacetin O-deethylation and p-nitrophenol hydroxylation activities (CYP1A2 and CYP2E1, respectively) were decreased moderately. Propranolol 7-hydroxylation activity (CYP2D2) did not change significantly. These results suggest differential susceptibility of the P450 isozymes to inhibitory mediators released from the injured colon. Coadministration of polymyxin B, which binds to and neutralizes endotoxin, partially prevented the decreases in CYP3A2 and CYP1A2 activities, suggesting involvement of endotoxin in the down-regulation of these P450 isozymes.