Reye's syndrome is the main contraindication of using aspirin in young children during fever-causing illnesses. The safety of paracetamol as a classical alternate therapy is now questionable due to increasing evidence of its correlation to increased incidence of autism. Therefore, this study was designed to investigate if resveratrol could provide protection against Reye's syndrome induced by 4-pentenoic acid in Wister albino rats. Methods and results: Compared to rats with untreated Reye's syndrome; 1 hour pre-treatment by low dose resveratrol (10 mg/kg by oral gavage) resulted in marked amelioration in liver functions in the form of significant decrease in serum transaminases (AST, ALT) and plasma ammonia levels, shortening of prothrombin time and increase in serum albumin levels. In addition, resveratrol prohibited oxidative stress markers as significant increase in GSH and decrease in MDA with restoration of complex I activity in liver tissues. The classical histopathological presentation in Reye's syndrome of microvesicular steatosis by light microscope and mitochondria distortion by electron microscope; has been improved by resveratrol pre-treatment. The efficient protection by resveratrol was determined by normalization in serum levels of AST and albumin as well as complex I activity, GSH and MDA. Conclusion: It could be concluded that pre-treatment with resveratrol in low dose could protect against Reye's syndrome partially via prohibition of oxidative stress and restoration of complex I activity. This may provide the opportunity to reconsider aspirin therapy for infants and young children. However, the verification of such result in clinical practice remains a real challenge.
Fig. 1: Induced Reye's syndrome (group II) showing multiple microvesicular steatosis (►) and mononuclear cellular infiltrate (→). (×200).

Fig. 2: Induced Reye's syndrome (group II) showing multiple microvesicular steatosis (→) and extracellular vacuoles with wide separation of the cells (*). Notice nuclear fragmentation (►). (×1000).

Fig. 3: Hepatocytes of induced Reye's syndrome (group II) showing crescents of chromatin margination inside the nucleus (N) with focal swelling (*) and disrupted nuclear envelope (wavy arrow), few mitochondria with destroyed cristae (►) and multiple vacuoles (→). Notice also focal disruption of the plasma membrane (curved arrow). (×11700).

Fig. 4: Hepatocytes of induced Reye's syndrome (group II) showing irregular contoured nucleus (N), few mitochondria (M), large sized cytoplasmic lipid droplets (L), multiple vacuoles (►) and electron dense bodies (→). (×11700).