Protective effects of hydroalcoholic extract of Aquilegia vulgaris and Rheum officinale against valproic acid induced oxidative stress in isolated rat hepatocytes

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Abstract:

despite the fact that valproic acid (VPA) a successful anticonvulsant drug considered to have relatively few adverse effects, VPA has been referred as the 3rd most common xenobiotics diagnosed of causing death as a result of liver injury. Prior studies revealed VPA is actually an oxidant compound. VPA can easily induce reactive oxygen species (ROS) formation, lipid peroxidation, glutathione depletion, mitochondrial membrane potential and lysosomal membrane layer damage in freshly isolated rat hepatocytes. in this particular study we investigated protective effects associated with hydroalcoholic extract Aquilegia vulgaris and also Rheum officinale against VPA induced ROS formation, lipid peroxidation, glutathione depletion, mitochondrial membrane potential and lysosomal membrane layer damage in isolated rat hepatocytes.

isolated rat hepatocytes were obtained by collagenase perfusion of the liver. Accelerated cytotoxicity mechanism screening (ACMS) strategies using fluorescent probes were applied for measurement of ROS formation, glutathione depletion, mitochondrial membrane potential and lysosomal membrane layer damage.

our results showed that both hydroalcoholic extract of Aquilegia vulgaris and Rheum officinale prevented hepatocytes against all oxidative parameters activated by VPA which includes hepatocytes cell lysis, ROS formation, lipid peroxidation, glutathione depletion, mitochondrial membrane potential and lysosomal membrane layer damage. hydroalcoholic extract of Aquilegia vulgaris was more protective against all measured activated oxidative marker when compared with hydroalcoholic extract of Rheum officinale.

our data revealed that both hydroalcoholic extract of Aquilegia vulgaris and Rheum officinale can certainly ameliorate oxidative injuries induced by VPA which this activity may correlate with their free radical scavenging activities.

Keyword: valproic acid; oxidative stress; Aquilegia vulgaris; Rheum officinale; isolated rat hepatocytes