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Notch 1 and Notch 3 expressions can modulate the liver fibrosis and Resveratrol can prevent liver injury by inhibiting Notch signaling.

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Notch signaling pathway is an evolutionary conserved signalling mechanism that regulates cell fate specification, stem cell maintenance, and initiation of differentiation in embryonic and postnatal tissues. There are four Notch receptors (Notch1, 2, 3 and 4) in mammals. Some researches reported that Notch signaling was implicated in human fibrosis diseases, such as pulmonary, renal and peritoneal fibrosis. And also, Lots of studyings about the Notch effects on development and embryogenesis has been well studied, too. But only several studies emphasized the involvement of the Notch signalling pathway in liver fibrosis recently. In our study we investigated whether Notch signaling can increase in an experimental liver fibrosis model or not and we also wanted to see the effects of an antioxidant therapy on Notch expressions. CCl_4 is a hepatotoxic agent which widely used to form an experimental liver damage. It causes liver cirrhosis, fibrosis, and necrosis by producing free radicals, initiating lipid peroxidation and causing centrilobular necrosis by activating especially hepatic stellate cells (HSC). Resveratrol is a naturally occurring polyphenol, mainly present in skin of grapes, red wine, mal berries, and peanuts. It has several pharmacological activities including anticancer, antioxidant, anti-inflammatory, antidiabetic activity.

In this study, 40 wistar-albino rats were used and devided to four groups. It was given SF to 1st group (control), CCl_4 to 2nd group, CCl_4+resveratrol to 3rd group and only resveratrol to 4th group.
At the and of the experiment (6 week), the tissue samples were collected and applied an immunostaining for Notch 1 and Notch 3 proteins. Sirius red and laminin stainings were applied for detecting fibrosis. And also samples were evaluated for GSH, CAT and protein oxidation biochemically.
As a result, Notch 1 and 3 protein expressions were stronger on fibrotic areas in CCl_4 group. Protein oxidation levels were higher in CCl_4 group than resveratrol applied 3rd group. In contrast, GSH and CAT levels were higher in 3rd group than the 2nd one.

In conclusion, Increasing of the Notch 1 and Notch 3 proteins in fibrotic areas can be indicating the importance of Notch mediating signaling on liver fibrosis by HSC activations. Although, resveratrol prevents liver fibrosis by decreasing lipid peroxidation and can be effective for inhibiting the Notch proteins.