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## Influence of pegylated interferon and Ribavirin on insulin resistance and metabolic factors in patients with chronic hepatitis C

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**Aims:** This study was aimed to evaluate the effect of pegylated interferon alfa 2a/2b and ribavirin, the agents used in chronic hepatitis C on insulin resistance and metabolic factors.

**Methods:** A total of 104 chronic hepatitis C patients applying to Katip Celebi University Ataturk Research and Training Hospital, Department of Gastroenterology between 01.01.2005-01.11.2012 with ages ranging from 20 to 75 years having serum insulin (0 and 48 weeks) and HCV-RNA (0, 12, 24, 48 and 72 weeks) levels available were included in the study. These parameters were assessed according to the groups based on response to therapy (sustained virologic response SVR, relapse and non-responders).

**Results:** Of the 104 patients, SVR was achieved in 55 but 49 (non-SVR). In univariate analyses, no statistically significant association was obtained in gender, age, body mass index, waist circumference, total cholesterol, triglyceride, LDL-cholesterol, HDL-cholesterol, fasting plasma glucose plus insulin and HOMA score at week 0, platelet, arterial blood pressure, degree of steatosis and the last but not least histological activity index between SVR and non-SVR groups. However, a statistically significant difference was noted in GGT, insulin level plus HOMA score and existence of insulin resistance at week 48, log HCV-RNA and fibrosis between the aforementioned groups ( $p < 0.05$ ). In multivariate analysis, it was concluded that log HCV-RNA, triglyceride and week 48 insulin resistance had influence on SVR ( $p < 0.05$ ) while age, body mass index and fibrosis did not.

**Conclusions:** Insulin resistance is accepted to have a negative effect of SVR. Insulin resistance may improve once SVR is achieved. In this context, it can be advocated that the regression of insulin resistance at week 48 detected in 0 week may be a predictive factor for SVR at week 72.

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## Hyaluronic acid (HA)-polyethylene glycol (PEG) as injectable hydrogel for intervertebral disc degeneration patients' therapy

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Chronic Low Back Pain (CLBP) approximately 60-80% of the world population has ever experienced it at least once during their lifetime. Injectable hydrogels are the newest way to restore the disc thickness and hydration caused by disc degeneration by means of minimally invasive surgery. The needed polymers must also have biocompatibility, degradation properties and biological responses that are good for the body, so that the combination of thermo-responsive polymers with natural polymers can be a strong candidate of gelling. Thus, those types of polymers can be combined to improve the characteristic properties of injectable hydrogels, leading to the use of hyaluronic acid (a natural polymer) and polyethylene glycol (PEG) with the Horse Radish Peroxide cross-linker (HRP) enzymes. The swelling test results using the PBS, which approaches the ideal disc values were samples with variation of enzyme concentrations of 0.25  $\mu\text{mol}/\text{min}/\text{mL}$ , which is 33.95%. The degradation test proved that the sample degradation increased along with the decrease of the HRP enzyme concentration. The results of the cytotoxicity assay with MTT assay method showed that all three samples resulted in 90% of living cells are not toxic. *In vitro* injection models demonstrated that higher the concentration of the enzymes, the less the state of the gel would rupture when released from the agarose gel. The functional group characterization shows cross-linking bonding in sample with enzyme adding. The conclusion of this study is the PEG-HA-HRP enzymes are safe polymer composites that have the potential to be applied as an injectable hydrogel for intervertebral disc degeneration.

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