**Title:** Evaluation of antigenotoxic effects of Glucosamine and N-acetylglucosamine on human peripheral lymphocytes exposed to oxidative stress  

**Abstract:** It is becoming increasingly evident that oxidative stresses and DNA damage are related to various diseases and pathological conditions such as carcinogenesis, atherosclerosis, and aging and so antioxidants can minimize their incidence. D-Glucosamine (GlcN) is a naturally occurring amino sugar that possesses excellent antioxidant activities. The purpose of this study was to evaluate the antigenotoxic effects of D-Glucosamine (GlcN) and its acetylated analogue (N-acetylglucosamine: GlcNAc) on human peripheral lymphocytes using alkaline single cell gel electrophoresis approach (comet assay).

**Method:** Lymphocytes were isolated from blood samples taken from healthy volunteers. DNA breaks and resistance to H2O2-induced damage were measured using comet assay. Human lymphocytes were incubated with GlcN and/or GlcNAc (2.5, 5, 10, 20 and 40 mM) alone or a combination of different concentrations of GlcN and and/or GlcNAc and H2O2. Untreated cells, H2O2 (25 μM) and were considered as negative control and positive control for our study, respectively. Single cells were analyzed with “TriTek Cometscore version 1.5” software. The DNA damage was expressed as percent tail DNA.

**Results:** Glucosamine exhibited a concentration dependent increase in protection activity against DNA damage induced by 25 μM H2O2 (from 38% to 5%) but its acetylated analogue (GlcNAc) shows very weak protection activity only at highest concentration (40 mM).

**Conclusions:** Our results indicated that glucosamine could be a suitable agent for preventing chemically induced DNA and chromosome damage in vitro. However, further studies should be performed to better understand the mechanisms and conditions underlying its chemopreventive activity.

**Presentation:** Poster