Reviewer's report

Title: Comparison of glucose derivatives effects on cartilage degradation

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Reviewer: Giuseppe Peretti

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The Authors present an experiment having the aim of comparing the effects of Glucose (Glc), Glucuronic acid (GlcA), Glucosamine hydrochloride (GlcN-HCl) and Glucosamine sulfate (GlcN-S) on cartilage degradation and on the anabolic and catabolic gene expression by cultured articular chondrocytes.

The Authors conclude that from chondroprotective point of view, “GlcN-S showed highest effects. However, in the gene expression levels, GlcN-S showed the highest effect just on MMP-13 expression. Secondly, GlcN-HCl and GlcN-S showed significant effects in catabolic gene expressions but not in anabolic genes whereas Glc and GlcA showed good effects in anabolic genes but not in catabolic genes.

Articular chondrocyte utilized here were expanded and passaged four times in monolayer culture. This may have caused a loss in their original phenotype, as typically occurs during the monolayer expansion. This should have been verified by a comparison of a gene expression analysis on freshly isolated chondrocytes to the control group cells of the present work. In fact, all statements referred to chondrocytes may be incorrect and should be specified in the discussion.

The Authors utilize increasing concentrations of Glucose, Glucuronic acid, Glucosamine hydrochloride and Glucosamine sulfate which are different in the explants study (20, 40, 80 mM) and in the isolated cells study (5, 10, 20 mM). Authors should give an explanation for this choice or provide adequate references.

Several grammar mistakes and typos are present throughout the text.

Specific comments

Results

Pag. 6 line 17-24 “For the remaining uronic acid in cartilage discs, when cartilage discs were treated with ...”

The data presented in figure 1C and commented in the text above, are not statistically significant. Therefore, all the statements should be rephrased accordingly.

In all figures, the word “Viartril-S” was never presented in the text or in the legends.
**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests