SYNERGISTIC CHONDROPROTECTIVE EFFECT OF CHONDROITIN SULFATE AND GLUCOSAMINE: A PHARMACOPROTEOMIC STUDY.

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Enzymatic digestion of human OA cartilage for chondrocytes release.

Cell treatment with 200 μg/mL of chondroitin sulfate (CS) & glucosamine hydrochloride (GH), alone & in combination.


2D fractionation of iTRAQ labeled peptide mixtures by RP-HPLC & nanoscale RP-LC-MS/MS.
The protein-protein interaction network...
CONCLUSIONS

Chondrocytes secreted proteins are present at nM concentrations in an abundant background of ECM and serum proteins. iTRAQ represents a favorable strategy for identifying minute changes in the chondrocytes secretion pattern.

iTRAQ reagents, improving MALDI ionisation, allowed us to identify for the first time by MALDI-MS cartilage specific proteins, such as COL2A1, in chondrocytes secretome.

Our work provides a comprehensive quantitative analysis of the effects of CS & GH, alone and in combination, in OA chondrocytes secretome. Proteins modulated by these drug are potential novel molecular targets for OA treatment (e.g. TSP1).

The stronger anabolic effect observed for the combined administration confirms the synergistic chondroprotective effect of chondroitin sulfate and glucosamine hydrochloride, previously described by our group.