collagenase solution [2 mg/mL type-II collagenase; 5% FCS; 2% P/S/A; 1% L-glutamine and 0.1 mg/mL DNA I or 150 U/L in RPMI]. The cells were filtered through a nylon filter with a pore diameter of 25 μm. Cells were cultured at a density of 5,000 to 10,000 cells/cm^2 in culture bottles with a surface area of 25 cm^2 or 75 cm^2. The culture medium used was RPMI with 10% FCS, 1% P/S and 1% L-glutamine. After 24 hours of culture, the synoviocytes were incubated with IB0004, HA-E and HA-F for 12, 24 and 48 h at the concentration of 1μg/ml, 10μg/ml, 100μg/ml and 200μg/ml and compared for eHA content in culture supernatant measured by ELISA (Corgenix Inc., USA). The results are presented as the mean of the 9 individual experiments carried out in the cultures ± SD. Statistical analysis was performed using Student's two-tailed t test for unpaired data and significant when $p < 0.05$.

Results: Baseline levels of eHA measured in the cell cultures with no intervention were 469, 614 and 605 ng/ml after 12, 24 and 48 hours, respectively (Table 1). All three interventions (IB0004, HA-E and HA-F) induced dose dependent increases in eHA at all three incubation times (12, 24 and 48 hours) compared to basal levels. The increases in eHA synthesis were not significant at the lowest intervention concentrations of 1 μg/ml and 10 μg/ml, but were significant ($p < 0.05$) for IB0004, HA-E and HA-F at the two higher concentrations, 100 μg/ml and 200 μg/ml at hours 12, 24 and 48. There were significant differences noted between intervention groups. After 12 hours, cells cultured with IB0004 produced the highest levels of eHA at both 100 (41,667 ng/ml) and 200 μg/ml (90,049 ng/ml). These values were significantly higher than the eHA values for HA-F ($p < 0.05$). This difference was even more pronounced after 24 hours of incubation for IB0004 vs HA-E and IB004 vs HA-F ($p < 0.01$). After 48 hours, the levels of eHA in the cultures of the three molecules were less differentiated. At the concentration of 100 μg/ml, the highest levels of eHA were still found in the cells cultured with IB0004 ($p < 0.05$ compared to HA-F), followed by HA-E and HA-F, but at 200 μg/ml, HA-E showed the highest eHA stimulation (Table 1).

Table 1. Synoviocytes eHA stimulation levels- baseline and with three interventions (±SD)

All values significant over baseline ($p<0.05$)	Concentration HA (ng/ml)		
	12 Hours	24 Hours	48 Hours
Baseline (0 ng/ml)	469 (130)	614 (92)	605 (129)
IB0004 (100 ng/ml)	41667 (1361)	82548 (9675)	46258 (7550)
IB0004 (200 ng/ml)	90049 (4159)	132669 (5140)	102715 (9811)
HA-E (100 ng/ml)	26728 (5441)	28745 (4269)	29152 (5195)
HA-E (200 ng/ml)	82936 (3315)	93120 (6653)	127767 (9568)
HA-F (100 ng/ml)	10620 (787)	16747 (1613)	17429 (2027)
HA-F (200 ng/ml)	63528 (10817)	73649 (7794)	87576 (8113)
			$p<0.05$ for all interventions

Conclusions: This comparative study showed a dose-dependent effect for all three groups (IB0004, extracted HA and fermented HA) on endogenous HA synthesis in human synoviocytes, with the most effective concentrations being 100 μg/ml and 200 μg/ml. IB0004 was most efficient in inducing eHA synthesis in synoviocytes, followed by extracted HA and fermented HA.

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EFFICACY OF GLUCOSAMINE HYDROCHLORIDE OR SPECIALIZED ROSEHIP POWDER IN OSTEOARTHRITIS PATIENTS: AN INDIRECT COMPARISON META-ANALYSIS

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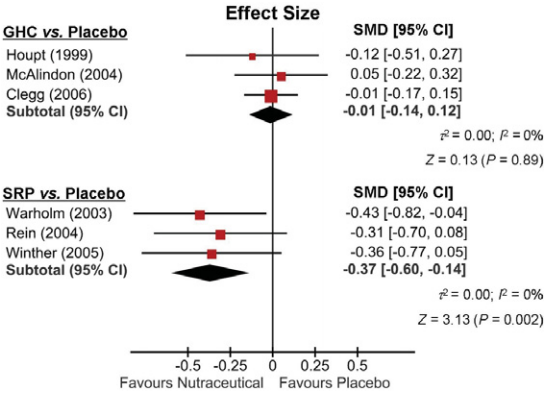
Purpose: In the absence of randomized trials with head-to-head comparisons of Glucosamine Hydrochloride (GHC) and Specialized Rosehip Powder (SRP), we subjected the pain reducing effect of GHC and SRP therapy for OA to an indirect comparison meta-analysis.

Methods: From published meta-analyses we know that heterogeneity among trials of glucosamine for pain in OA is larger than would be expected by chance - an inconsistency making conclusions difficult and differences were shown between various preparations of glucosamine (Vlad SC, A&R 2007). On the other hand, a recent meta-analysis of the efficacy associated with the use of a patented SRP, showed homogeneity (Christensen R, OAC 2008). It is of a large interest to the scientific community to find indications of effect on pain of such preparations in the available literature. Randomized controlled trials (RCTs) included in the original above mentioned meta-analyses were considered eligible for inclusion; i.e. only randomized, double-blind, placebo-controlled trials. The standardized mean difference (SMD) for each study was applied as effect size. We calculated the I^2 index to evaluate the inconsistency via the percentage of total variation across trials that is attributable to heterogeneity rather than to chance. We used standard random-effects meta-analysis as default option (Review Manager, v. 5.0.18). The estimated difference in efficacy of GHC and SRP was analyzed using the Bucher approach, leading to an indirect comparison via the two direct effect sizes.

Results: Three studies included for the GHC analysis (including 933 patients in total) consistently showed no clinical effect (ES= -0.01 [-0.14, 0.12], P=0.89, I^2=0%). Whereas the three studies using SRP (287 patients in total) showed a consistent and significant clinical improvement compared to placebo (SMD= 0.37 [-0.60, -0.14], P=0.002, I^2=0%). When comparing these two estimates it was evident that SRP was superior to GHC (SMD=0.36 [0.10, 0.62], Z= 2.67, P=0.008).



Conclusions: Based on available RCTs it was evident that glucosamine hydrochloride had no effect on pain in OA patients compared to placebo. The patented rosehip preparation tested in RCTs showed a statistical- and clinically-significant effect compared to placebo. We conclude that based on the available evidence from meta-analyses, an indirect comparison showed the specialized rosehip powder to be more efficacious than glucosamine hydrochloride - reducing pain in osteoarthritis patients.

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PREDICTING MAXIMAL STRENGTH OF QUADRICEPS FROM SUBMAXIMAL PERFORMANCE IN INDIVIDUALS WITH KNEE JOINT OSTEOARTHRITIS

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Purpose: The purpose of the current study was to compare the accuracy of 12 maximal strength (1RM) prediction equations