

Chondro'SEA[®], an ally in improving joint comfort and mobility

Joint pain is a genuine public health concern, affecting approximately one in two French adults and one in three individuals aged 18–24 (1).

Over 12 million French people suffer from rheumatic conditions — the collective term for musculoskeletal disorders — and no fewer than 10 million are affected by osteoarthritis, the most common chronic joint disease worldwide (1,2). Among those living with rheumatic conditions, 90% report that joint pain negatively impacts their sleep and mood, and 56% have had to limit or even stop leisure activities (1,2). Because these conditions have a lasting effect on quality of life, reduce mobility, and promote sedentary behaviour, addressing chronic joint pain is essential to prevent the onset of a negative cycle involving joint discomfort, decrease of physical activity, and weight gain.

Chondro'Sea's marine-derived chondroitin sulphate, developed by Pharmanager Ingredients, is an active ingredient obtained through a specific hydrolysis process of fish cartilage. It has demonstrated beneficial effects in reducing joint discomfort and improving smartwatch-monitored mobility, in adults over 50 experiencing joint pain for more than three months.

PROTECTING JOINT CARTILAGE

Joint discomfort is one of the consequences of the chronic degeneration of the entire joint. This condition is characterised by cartilage damage, inflammation of the synovial membrane, and remodelling of the subchondral bone (3,4). The anti-inflammatory activities of chondroitin sulphate — a sulphated glycosaminoglycan belonging to the proteoglycan family and a major component of joint cartilage — at the joint level have been well documented in literature. These effects involve regulation of the NF-κB transcription factor and the Nrf2 signalling pathway (5). A complementary mechanism of action of chondroitin sulphate helps the stimulation of proteoglycan synthesis and the reduction of

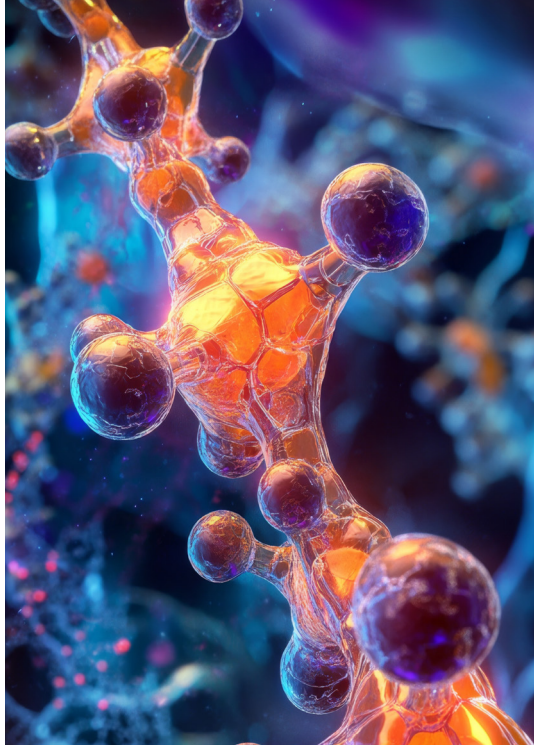
catabolic activity of chondrocytes (6).

An in vivo study comparing the cartilage-protective activity of Chondro'Sea[®] with a reference pain treatment demonstrated superior effects of Chondro'Sea[®] in preventing knee cartilage degradation. These initial preclinical findings, together with a bioavailability study showing a faster absorption profile (around 30 minutes) compared with bovine chondroitin, confirm Chondro'Sea's potential in enhancing joint comfort.

IMPROVING JOINT COMFORT

A real-world, randomised, double-blind study was conducted over three months with 180 adults aged 50 to 75 experiencing joint discomfort for more than three months. Participants were randomly assigned to three groups: Chondro'Sea[®] at 450 mg/day (the recommended supplementation dose), Chondro'Sea[®] at 900 mg/day (approaching the pharmacological dose in France), and a placebo control group. At the start of the study, participants assessed their joint discomfort ...





- using a visual analogue scale (VAS). Within each group, the most affected individuals—those scoring 8–10 on the VAS—were classified into subgroups named “Discomfort+.”

After three months of supplementation with Chondro’Sea® at 450 mg/day, the total WOMAC (Western Ontario and McMaster Universities Osteoarthritis Index) score and the WOMAC pain subdomain in the “Discomfort+” subgroup improved by 40% and 42% respectively, compared with only 18% and 22% in the placebo “Discomfort+” group. Joint function and stiffness also improved: WOMAC function and WOMAC stiffness subdomains decreased by 38% and 41% in the 450 mg/day group, versus 16% and 18% in the placebo group (Figure 1).

Beyond WOMAC scores, everyday activities became noticeably less uncomfortable: pain during walking decreased by 45%, while night-time discomfort fell by 43% after three months of supplementation with Chondro’Sea® at 450 mg/day.

FEWER LIMITATIONS, GREATER MOBILITY

Likely as a result of reduced joint discomfort, limitations in daily activities reported by the Chondro’Sea® “Discomfort+” group were significantly reduced following supplementation. Limitations in physical activities, domestic tasks, work, and social interactions decreased by an average of 30–50% (Figure 2).

Self-reported improvements in joint comfort and quality of life were in line with objective mobility data collected via the smartwatch. Throughout the study, daily steps, steps one hour after waking, and daily active minutes were recorded and averaged over four weeks. Comparing data from the first and third months revealed significant increases in all three parameters among the most

painful participants in the Chondro’Sea® 450 mg/day group, compared with the placebo subgroup (Figure 3).

Participants in the “Discomfort+” group taking Chondro’Sea® increased their daily step count by 7.3% over the three-month period, translating into approximately 170 additional meters per day, or roughly 1.2 km per week! In contrast, the most affected individuals in the placebo group reduced their weekly distance by an average of 120 meters.

NOTICEABLE RESULTS ACROSS ALL LEVELS OF DISCOMFORT

The benefits observed in the most affected participants (“Discomfort+”) were generally confirmed across all participants in the Chondro’Sea® groups (450 mg/day and 900 mg/day), with significant differences versus placebo in both cases, particularly among those experiencing higher levels of discomfort. Overall improvements in joint discomfort for participants taking Chondro’Sea® 450 mg/day were reflected in significant enhancements versus placebo in total WOMAC scores (-32%), WOMAC pain (-34%), and WOMAC function (-32%). Additionally, 80% of participants in this group increased their daily mobility, as recorded by the smartwatch, and 70% were more active throughout the day. Sleep quality also improved, extending by an average of nine minutes per night—the equivalent of one additional night’s sleep every two months.

After three months, 73% of participants supplemented with 450 mg/day considered Chondro’Sea® as effective, and 72% reported being satisfied and willing to purchase the supplement.

A SOLUTION TO RESTORE JOINT COMFORT AND QUALITY OF LIFE

Joint pain affects all age groups, though osteoarthritis remains the primary cause. This age-related condition, typically emerging from 45 years onwards, is associated with discomfort that limits mobility and impacts daily life. When it becomes chronic, joint discomfort can create a negative cycle in which reduced movement leads to weight gain, further contributing to the persistence and worsening of joint pain. By supporting mobility and daily activities while alleviating joint discomfort, Chondro’Sea® offers a natural solution supported by strong scientific evidence to reverse this vicious cycle into a virtuous one (Figure 4).

Whether the goal is to maintain an active lifestyle, preserve autonomy, or simply enjoy daily life without limitation, Chondro’Sea® helps you enhance your overall well-being and support you in a fulfilling life. •