**Objective**

To determine the efficacy of the oral administration of yoghurt supplemented with Mobilee® in healthy individuals with mild joint discomfort.

**Methods**

This is a randomized, double-blind, placebo-controlled nutritional intervention trial in which 77 participants with mild knee pain (VAS between 30 and 50 mm) were randomized into two groups. The study group ate one yoghurt per day supplemented with 80 mg of Mobilee® for a period of 90 days. The control group ate the same yoghurt without any supplement. Clinical assessment included isokinetic test of thigh muscles, ultrasonographic evaluation of the knee, and pain assessed using the VAS scale. Whole-genome microarray analysis of blood samples from a subset of 20 subjects collected pre and post intervention was assessed to explore the feasibility of using total human blood RNA as a source of biomarkers of articular health improvement.

**Results**

The daily eating of yoghurt supplemented with Mobilee® reduced pain intensity, reaching significantly lower values compared to placebo from the second month of treatment (32.5±4.96 vs. 34.0±3.85 mm respectively; P=0.005), and specially at the third month (21.1±12.36 vs. 31.9±15.81 mm; P=0.0005).

The ultrasonographic assessment revealed a significant reduction on the degree of synovial effusion associated with the eating of yoghurts supplemented with Mobilee® as compared to placebo (44% vs. 22% respectively; P<0.05).

The subanalysis of the muscular strength evolution excluding those participants with a pathologic degree of synovial fluid at baseline, showed a reduction in muscular strength on the placebo group after 3 months of study (-2.3±2.71 Nm), while in Mobilee® group it was significantly increased (+2.9±1.67 Nm; P<0.05).

Transcriptomic analysis revealed that 165 known genes were differentially expressed in blood cells between Mobilee® and placebo groups post-intervention, but not pre-intervention (P<0.05; fold-change≥1.2). Some of them are related to GAG metabolism and extracellular matrix dynamics. In particular, lower expression of cartilage degrading enzymes as glucuronidase-beta and matrix metallopeptidase 23B were found in the Mobilee® group.

**Conclusions**

This prospective placebo-controlled nutritional study confirmed that 3 months of intake of a natural product containing Mobilee® in healthy individuals with knee discomfort reduces pain and joint effusion, and provides improvements in muscle strength in those patients without joint effusion. Genes related to GAG metabolism and extracellular matrix dynamics are differentially expressed in blood cells between the supplement and placebo groups post-intervention, and the expression of some of these genes correlates with indicators of articular pain and muscular strength.