

Coll2-1

Coll2-1 increases in OA population by comparison to asymptomatic control group (D)

In 2005, Deberg and colleagues (Deberg, Labasse et al. 2005) provided the first publication related to Coll2-1 immunoassay. The results were the first demonstration of the diagnostic value of the biomarker Coll2-1 whose concentration increases in OA population by comparison to age-matched healthy subjects. In addition, the authors observed that neither the age and nor the gender modified the Coll2-1 serum level in healthy subjects aged from 20 to 65 years.

Coll2-1 concentration is highly specific to affected joint (B)

The specificity of Coll2-1 for osteoarthritic joint and its capacity to reflect in serum the cartilage integrity was shown in an elegant study involving patients undergoing total hip or knee replacement (Deberg, Dubuc et al. 2007). Coll2-1 was measured in serum before surgery and 3 and 12 months post-surgery.

Three months after joint replacement, Coll2-1 serum levels were decreased ($p < 0.001$) and even reached the value of control population. At 1 year post-surgery, Coll2-1 levels remained to the 3-month values in the knee and hip groups.

Coll2-1 as biomarker of efficacy of intervention (E)

Coll2-1 used to monitor efficacy of hyaluronic acid-based Intra-articular viscosupplementation

Men and non-pregnant women, aged 30–85, suffering from symptomatic tibiofemoral and/or patella-femoral OA of one knee fulfilling the American College of Rheumatology clinical criteria, and whose diagnosis was confirmed radiologically (Kellgren-Lawrence [KL] II), 26 were included.

Two weeks after the screening visit (D-15), patients received in the target knee, three IA injections, 1 week apart, of 2 ml of a partially cross-linked HA derivative (Hylan GF-20, Synvisc1, Genzyme Biosurgery, MA). Follow-up visits were planned at day (D) 30 and D90. At D-15 (screening visit), D1 (day of the 1st i.a. injection of HA), D30 and D90, serum samples were collected for biological analysis. There was no statistical difference in the serum concentrations of Coll2-1 between D-15 (screening visit) and the day of the first injection of HA (D1).

The serum concentrations of Coll2-1 decreased between the day of the first HA injection (D1) and the two follow up visits at D30 and D90. This decrease is significant between D1 and D30 for Coll2-1 (Wilcoxon test, $p < 0.0002$) (Henrotin, Chevalier et al. 2013).

Coll2-1 used to monitor efficacy of joint health food supplement

Twenty-two patients with knee OA were asked to take 2x3 caps/day of bio-optimized curcumin (Flexofyto[®]) for 3 months. They were monitored after 7, 14, 28 and 84 days of treatment. The serum levels of Coll-2-1 were determined before and after 14 and 84 days of treatment. The intake of curcumin induced a significant and systematic reduction of Coll2-1. A decrease of serum Coll2-1 level was recorded in all patients (Henrotin, Gharbi et al. 2014).

Coll2-1 as biomarker of prognosis (P) and burden of disease (B)

Seventy-five patients with primary knee OA were included in a 3-year follow-up study. Mean joint space width (JSW) of the medial compartment of the femorotibial joint was measured with a computer assisted method on standardized radiographs taken at baseline and after a 3-year follow-up. Pain, stiffness, and physical function subscales of the Western Ontario and McMaster Universities (WOMAC) were assessed at the same time points. Type II collagen peptides Coll2-1 and Coll2-1NO2 were measured in urines at baseline, after 1 year and 3 years.

One-year change in Coll 2-1 and Coll 2-1 NO(2) urinary levels were negatively correlated with a 3-year change in JSW indicating that an increase of Coll 2-1 or Coll 2-1 NO2 over 1 year is predictive of subsequent joint space narrowing. At baseline, Coll 2-1 and Coll 2-1 NO2 urinary levels were indicative of the clinical activity of knee OA and the increase of these peptides over 1 year was predictive of the radiological progression of knee OA (Deberg, Labasse et al. 2005). In addition, the authors found significant correlations were found between the urinary Coll 2-1 and Coll 2-1 NO2 levels at baseline and the global WOMAC score and its subscales for pain (Deberg, Labasse et al. 2005).