

SurForce® is a minimally manipulated flowable amniotic membrane tissue allograft designed to retain the therapeutic properties of the amniotic membrane through cryopreservation. It is an injectable allograft for homologous use only that allows the physician freedom for use in precise applications.

SurFactor® is a minimally manipulated amnion-derived tissue allograft designed to be the highest quality shelf-stable product on the market today. It is an injectable allograft for homologous use only.

1. The total amount of collagen was measured in SurForce® and SurFactor® using Sirius Red Total Collagen Detection Kit (Chondrex). Kit detection does not discriminate between collagen types. Two fractions of collagen, soluble and water-insoluble were measured in parallel. Four different lots were analyzed (N=4). Water-Insoluble collagen was solubilized using 0.05M Acetic Acid solution. Absorbance was measured using Synergy HT microplate reader (BioTek®). Data was analyzed using Gen5 software (BioTek®).

Table 1. Collagen Amount

Product	Collagen amount, µg/ml; Mean ± SD
SurForce®, water-soluble fraction	4.2 ± 1.5
SurForce®, water-insoluble fraction	331.6 ± 244.5
SurFactor®, water-soluble fraction	45.6 ± 39.6
SurFactor®, water-insoluble fraction	273.4 ± 225.0

Collagen is a dominant structural component of articular cartilage (~75% by dry tissue weight). It is part of extracellular matrix that serves to provide mechanical strength and to absorb shock. Collagen molecules are mostly produced by chondrocytes. In osteoarthritis (OA), collagen network is degraded leading to progressive destruction of joints and the loss of function.

2. The amount of Hyaluronic Acid (HA) was measured in SurForce® and SurFactor® using Hyaluronan Quantitative ELISA Kit (R&D Systems). Assay utilizes the quantitative sandwich enzyme immunoassay principles. HA kit measures medium to high molecular weight HA (> 35kDa). Five different lots were analyzed (N=5). Absorbance was measured using Synergy HT microplate reader (BioTek). Data was analyzed using Gen5 software (BioTek®).

Table 2. HA Amount

Product	HA amount, µg/ml; Mean ± SD
SurForce®	1272 ± 138
SurFactor®	18,656 ± 5329

Hyaluronic acid (HA) is a main component of articular cartilage, which provides the backbone of large proteoglycan complexes. HA is viscoelastic and provides joint lubrication. In addition, HA binds to CD44 receptors and this binding leads to a decline in matrix metalloproteinase (MMP) production. As osteoarthritis (OA) progresses, HA concentration declines, which deteriorates mechanical/viscoelastic properties of synovial fluid. Moreover, in OA joints, molecular weight of HA shifts toward the lower ranges. Low molecular weight HA is anti-angiogenic and contributes to production of inflammatory mediators and to fibrosis. Unlike low molecular weight HA, high molecular weight HA is considered pro-angiogenic, anti-inflammatory and immunosuppressive. Apart from shock absorption and joint