

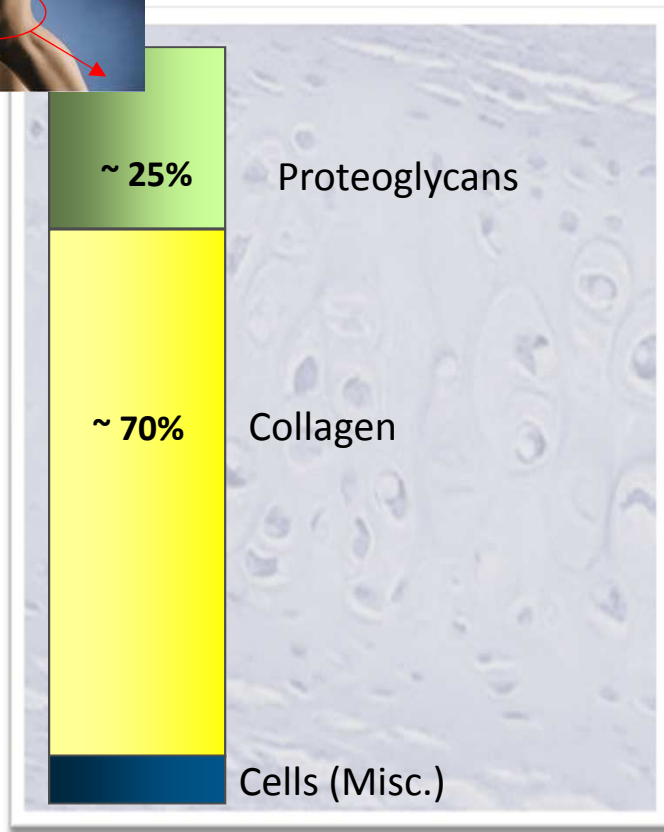
FORTIGEL® a New Generation Active for Joint Health

- Bioactive collagen peptides scientifically proven to stimulate growth of connective tissue, collagen & proteoglycans synthesis in particular
 - **FORTIGEL®** improves joint health
 - **Effective dose: 5 - 10 g/day**



FORTIGEL®
The Joint Health Revolution™

FORTIGEL® Stimulating Collagen Production **Mode of Action using the Example of Cartilage**

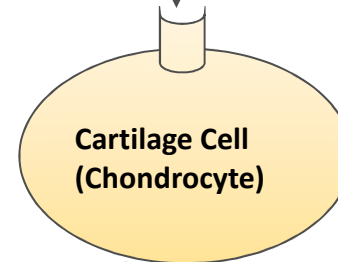


Composition of Joint Cartilage

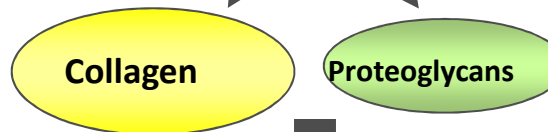
FORTIGEL® (Specific Bioactive Collagen Peptide®)



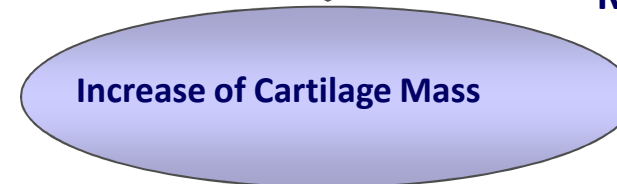
Stimulation



Production

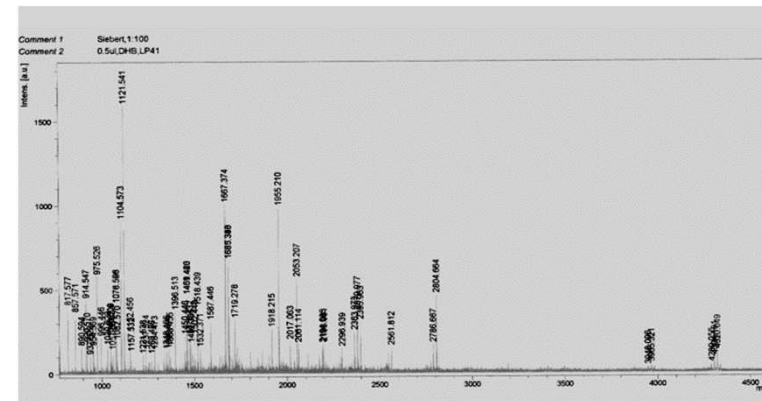
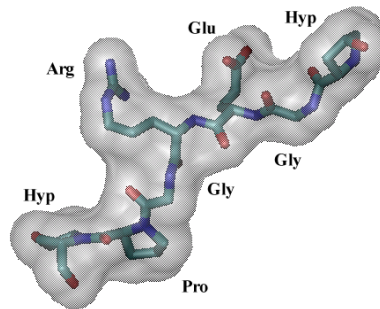


Regeneration



Specific *Bioactive Collagen Peptide*[®] to Stimulate Connective Tissue Metabolism

- A special composition of natural *Bioactive Collagen Peptides*[®] obtained by special enzymatic degradation of collagen and optimized to stimulate connective tissue metabolism
- Each composition of *Bioactive Collagen Peptides*[®] can be specifically characterized, e.g. FORTIGEL[®]:



Typical molecular weight fractions

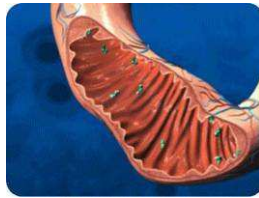
Average molecular weight	3,0 ± 0,5 kD
Molecular weight fraction	%
> 7,5 kD	< 10
3,5 – 7,5 kD	20 - 30
1,5 – 3,5 kD	30 - 33
0,5 – 1,5 kD	25 - 38
0,1 – 0,5 kD	< 5
Free amino acids	< 0,1

Characteristic mass peaks (m/z) by MALDI-MS

1048
1588
1849
1938
1957

FORTIGEL® Reaches the Joint Cartilage

Rapidly absorbed, partially in intact form

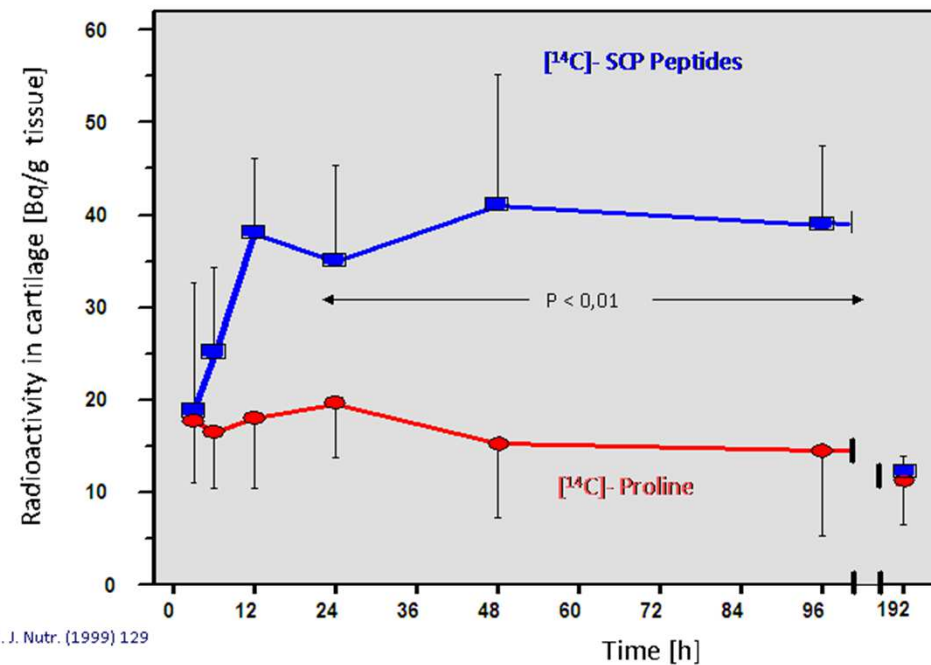


Distribution & accumulation in the target organ



Stimulatory and regulatory effect in the joints

Accumulation of SCP peptides in cartilage tissue



Oesser et al. J. Nutr. (1999) 129

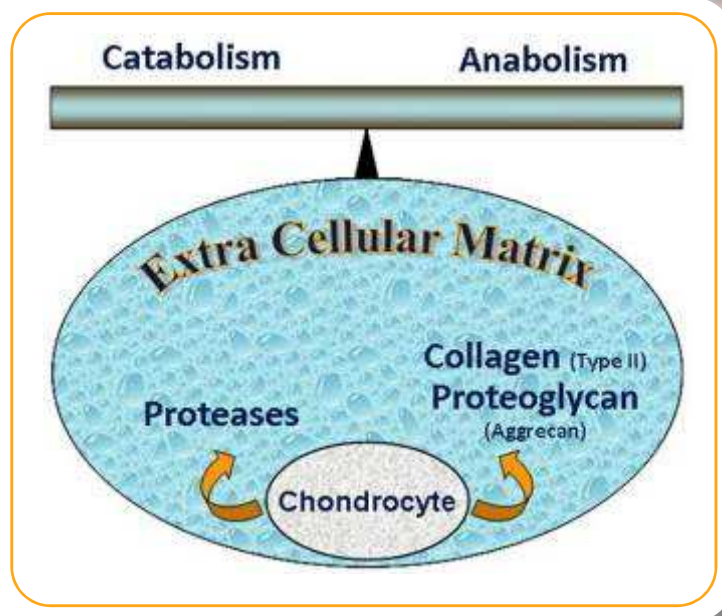
SCP = Specific Collagen Peptides (FORTIGEL®)

Not all Collagen Peptides are Bioactive Collagen Peptides®!

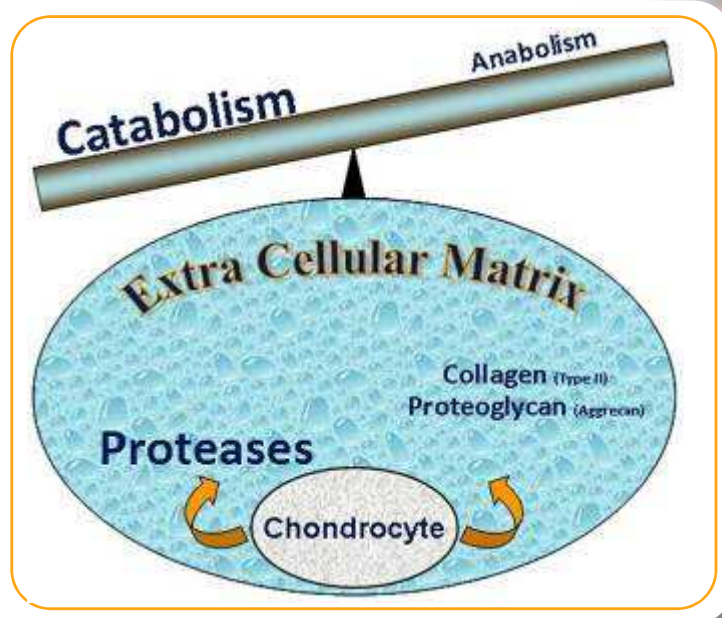


- Stimulation effect on in-vivo collagen synthesis widely varies between different types Collagen Peptides
- GELITA assures: Each clinical study is conducted with respective dedicated BCP
- Joint → Chondrocytes → FORTIGEL®

Healthy Joint Cartilage



Cartilage Degeneration



FORTIGEL® Clinical Scientific Substantiation

Studies in more than 2,500 patients showing the effect of FORTIGEL® in joint cartilage



Bioactive Collagen Peptides® proven to stimulate growth of connective tissue in joints with an effective dose of 5.0g/day

Investigator	Published	Subjects
Krug	1979	193
Götz	1982	60
Oberschelp	1985	154
Seeligmüller	1989	356
Adam	1991	81
Seeligmüller	1993	519
Beuker, Eck	1996	40
Beuker, Rosenfeld	1996	100
Moskowitz	2000	389
Zukley	2004	250
Carpenter	2005	102
Alf	2005	100
Clark	2008	147
McAlindon	2011	30

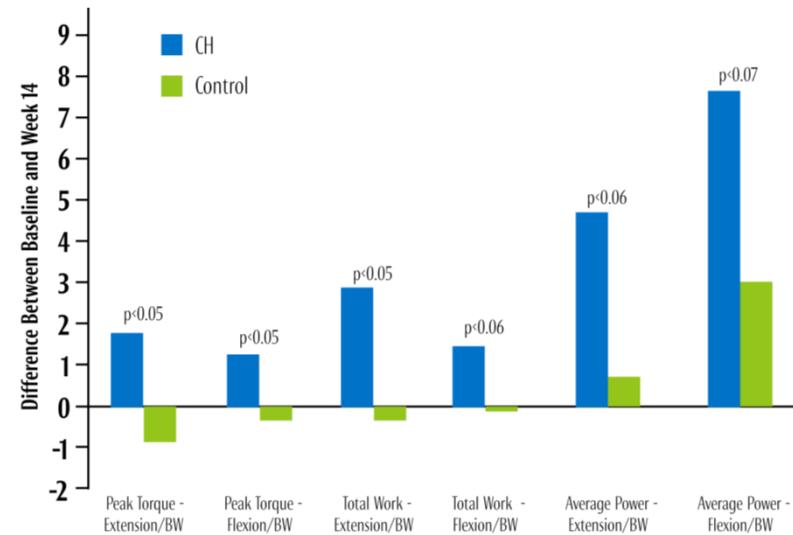
Rippe Study (2005) Confirms Significant Improvements in Joint Function in Patients with Mild Osteoarthritis

Design:

- Randomized, double blind, placebo controlled
- 250 patients with symptoms of mild osteoarthritis
- Therapy: 10 g FORTIGEL® or placebo
- 14 weeks trial
- pain, stiffness, mobility, flexibility and isometric / isokinetic leg strength assessments

Results:

- Consumption of FORTIGEL® showed significant improvements in joint function by means of isometric and isokinetic leg strength assessments in patients with mild osteoarthritis of the knee



Rippe et al. Medicine & Science in Sports & Exercise (2005)

PennState Study (2008): FORTIGEL® in Athletes

- **Study Design:**

- 147 student athletes, randomized, placebo-controlled, double-blind
- Therapy: 10g FORTIGEL® or placebo over 24 weeks
- Parameters: pain, mobility, flexibility in different joints

- **Results:**

- Significant improvements in joint problems (especially in the knee)
- Increase of performance & mobility
- Decrease of alternative therapies (massages / ice packs)



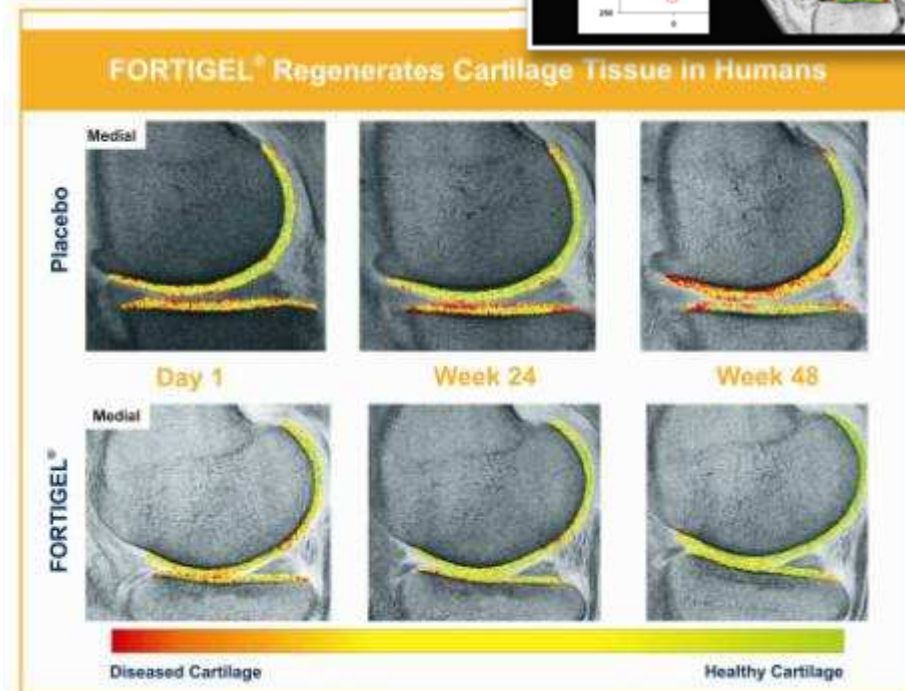
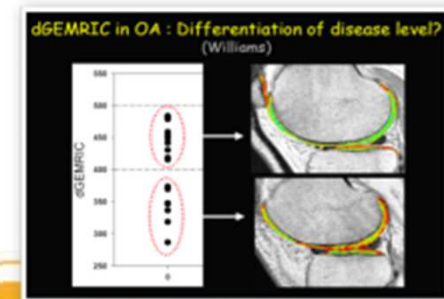
Tufts Medical Center Study, Boston (2011) Visualized the Joint Health Effect of FORTIGEL®

Design:

- Prospective, randomized, double blind, placebo controlled
- 30 individuals with mild grade of Osteoarthritis (Kellgren grade 1 – 2)
- Therapy: 10 g FORTIGEL® or placebo
- 11 months trial
- dGEMRIC data

Results

- Proteoglycan density in the knee joint cartilage was significantly increased after FORTIGEL® treatment



* FORTIGEL®

Collagen Peptides: “Essential Improvement” of Up-to-Date Protein Formulas and Blends

- Natural protein (Reg. (EC) No 853/2004)
 - Food (Clean label; no Food additive)
 - Zero allergic potential (mammalian derived)
 - High bioavailability
- Suitable for manifold applications
 - Excellent & clearly soluble
 - Neutral in taste
 - Broad range of resulting viscosities
 - High water binding capacity
- Renewable raw materials, high sustainability

