

The background of the slide is a photograph of an older man with grey hair and sunglasses, shirtless and wearing patterned swim trunks, carrying a long, yellowish surfboard under his arm. He is walking on a sandy beach towards the ocean. In the distance, there are green hills and a clear blue sky with some light clouds. The overall scene conveys a sense of active, healthy aging.

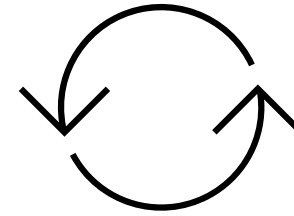
**New mechanistical data
Biological activity**

Joint discomfort, what is it?

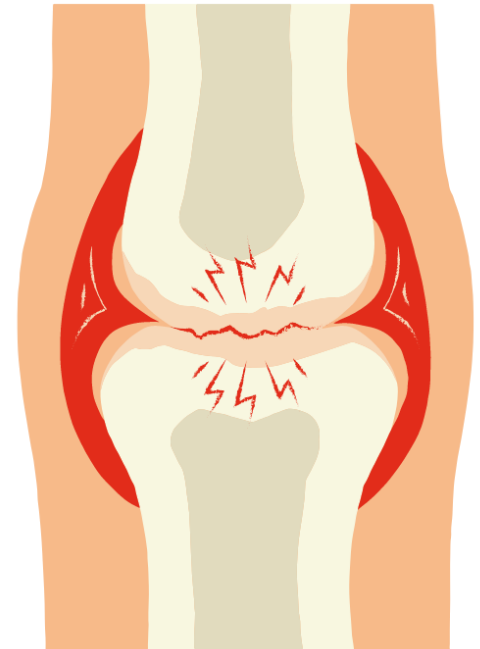
Ageing
Sedentary lifestyle
Overuse of a particular joint
Overweight
Genetic



Inflammation



Cartilage matrix degradation:
loss of collagen (type II) and GAGs

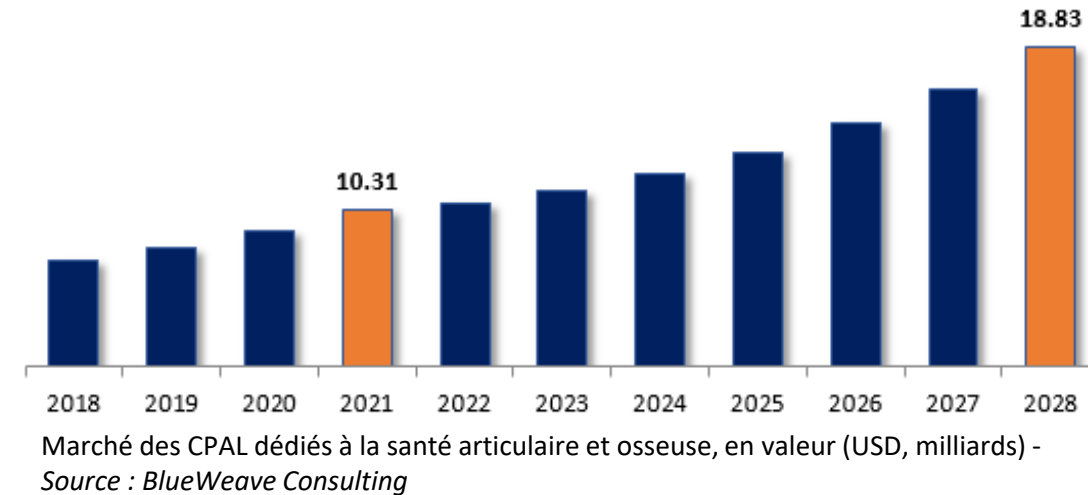


A continuous growing market

- Global bone & joint health market : **\$ 11,7 billion** in 2022¹
- Expected growth: **+ 7,3%** until 2027-2030²
- Market led by vitamins and minerals but increasing number of **collagen-based** new products launch

The solutions ?

- Symptomatic treatments like **pain-killers**
- Limit risk factors
- Dietary supplements



Unique and natural composition



Cartidyss® is made with a **solvent-free** water extraction process

Composition	Cartidyss®
Collagen proteins	≥ 62%
Glycosaminoglycans	37% (+/-5)
Chondroitin sulfate	27% (+/-3)
Glucosamin sulfate	16% (+/- 2)
Hyaluronic acid	1% (+/- 0,3)
Minerals	≤ 12%

Low molecular weight peptides:

More than 85% peptides < 3000 Da

- Highly digestible and bioavailable
- High level of tolerance

Cartidyss® benefits on Joint Health at only 1g/day

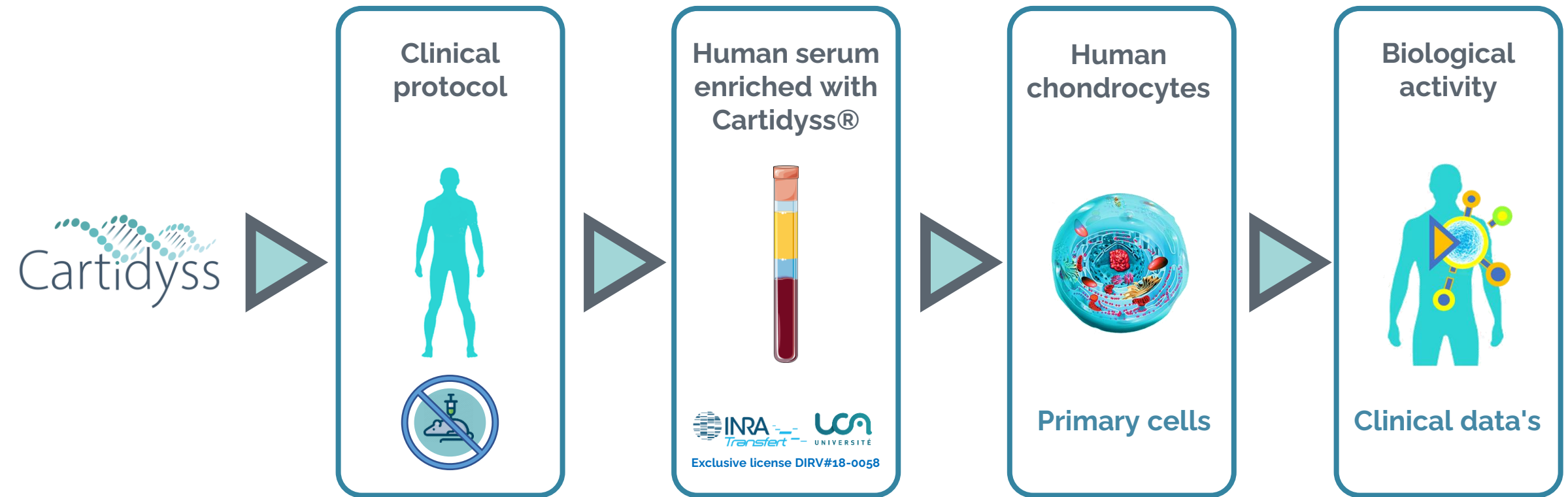
- Significant improvement of mobility
- Significant reduction of pain (-50% !)
- Significant positive impact on quality of life
- 2/3 of participants answered favorably to the supplementation



❖ New clinical study: Biological activity of Cartidyss® enriched serum (2022) – Publication in process

Innovative clinical study to evaluate:

- Absorption kinetics of Cartidyss® active molecules on human model
- Cartidyss® metabolite effects on chondrocytes (cartilage cells)



❖ New clinical study: Biological activity of Cartidyss® enriched serum (2022) – Publication in process

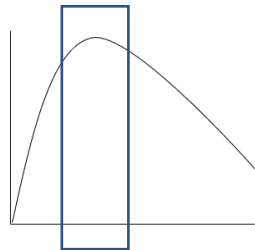
Innovative clinical protocol :



10 healthy volunteer men

Cartidyss
12g in 200 mL of water

Phase 1
*Determination of the
absorption peak*



Blood sampling

Kinetics from T0 – T240 min

Phase 2
*Serum collection: naive and
enriched with Cartidyss®*



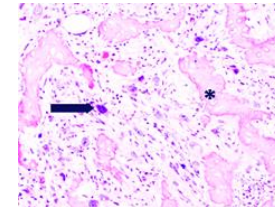
Blood sampling

T0 & at the
absorption peak



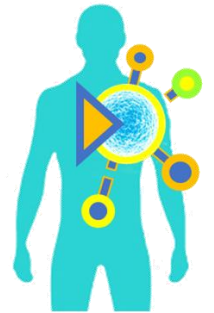
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Phase 3
*Incubation with targeted human primary
cells (48h, of which 24h are under
inflammatory stress induced by IL-1b)*



Functional assays leading to the
characterization of the cell behaviour

**Determination
of biological
activity**



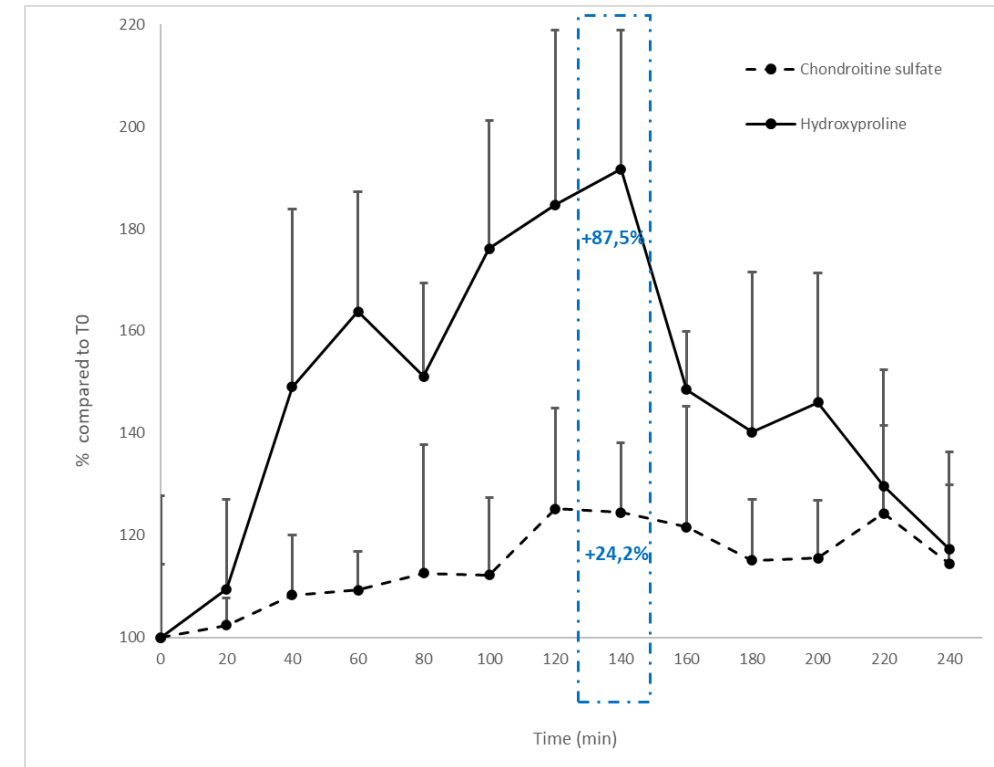
Clinical data's

Absorption kinetics of Cartidyss® active molecules

- **Hydroxyproline** kinetics (a collagen biomarker)
Hydroxyproline concentration in serum **increases by 88%** 140min after ingestion.
- **Chondroitin sulfate** (CS) kinetics
CS concentration in serum **increases by 24%** 140 min after ingestion

Cartidyss® active molecules are highly assimilable by human body

Kinetics of Cartidyss® active molecules

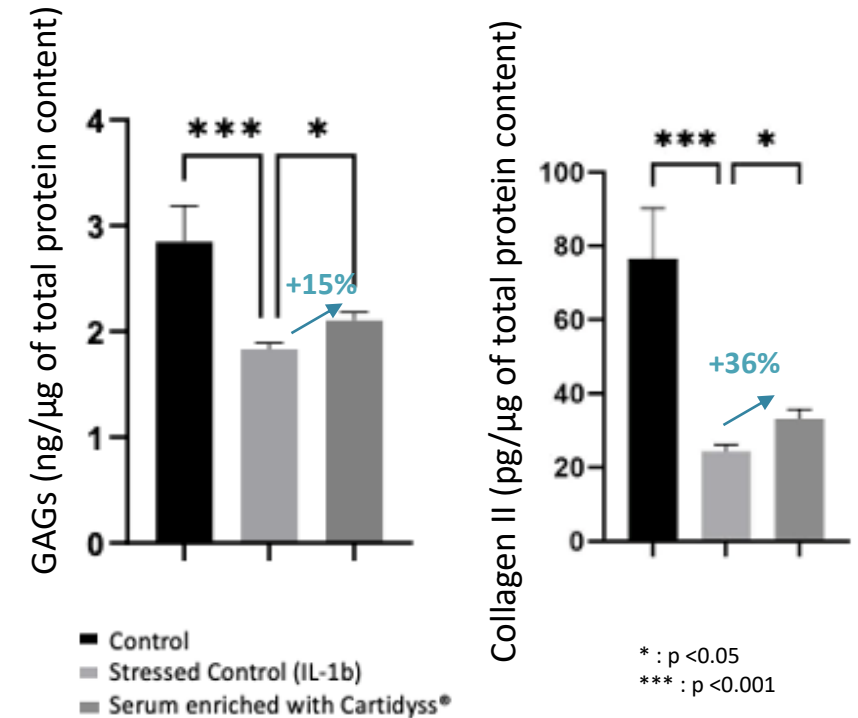


Effects of Cartidyss® metabolites on chondrocytes (cartilage cells)

➤ Maintenance of cartilage extracellular matrix

Chondrocytes are cartilage cells mainly responsible for the production of extracellular matrix components: collagen type II and GAGs.

On a human chondrocytes model, **Cartidyss® metabolites significantly reduce the negative effects induced by an inflammatory stress (IL-1b)**, which suggests the preservation of joint mobility.

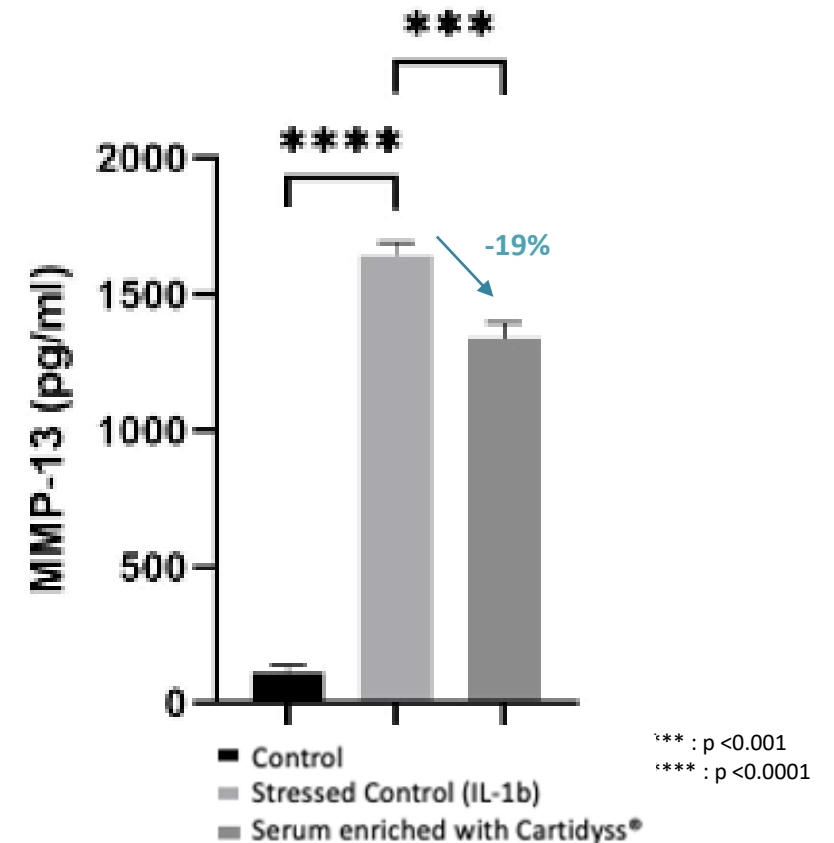


Effects of Cartidyss® metabolites on chondrocytes (cartilage cells)

➤ Collagenase-3 (MMP13) & protection of cartilage matrix

MMP13 enzyme is responsible for cartilage degradation.

On a human chondrocytes model, **Cartidyss® metabolites significantly inhibit the expression of MMP13**, which suggests a **protective action** of cartilage matrix.

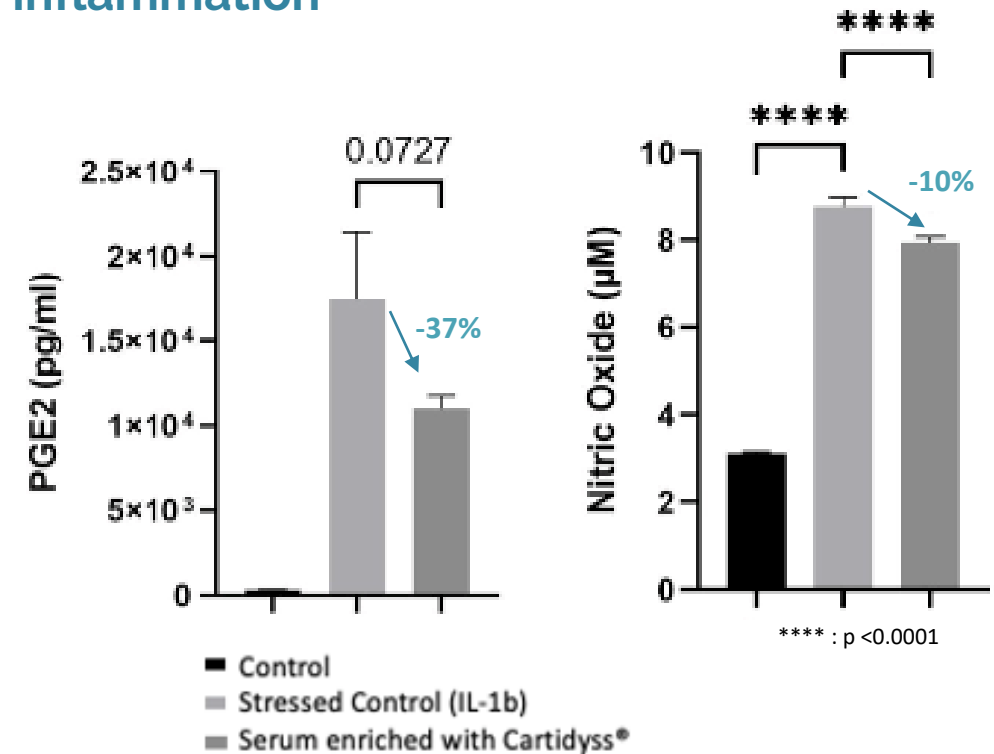


Effects of Cartidyss® metabolites on chondrocytes (cartilage cells)

➤ Prostaglandin E2 (PGE2), Nitric Oxide (NO) & limitation of the inflammation

PGE2 and NO are two signal molecules with a key role in inflammatory response. In OA cartilage, their production is increased, which stimulates its degradation.

On a human chondrocytes model, **Cartidyss® metabolites limit the production of these molecules**, which might explain the **reduction of pain** observed by the participants of the clinical study.



A unique ingredient for joint health

After 3 months at only 1g/day

Significant and perceived clinical results:

- ✓ **Pain reduction** (-50% after 3 months)
- ✓ Improvement of knee **mobility**
- ✓ Improvement of **quality of life**

Thanks to inner mechanisms of action

- **Preservation of the mechanic function of cartilage matrix**, cartilage extracellular matrix degradation is limited
- **Limitation of the production of pro-inflammatory molecules**, which might explain the reduction of pain felt by the participants of the clinical study



A unique ingredient for joint health

Easy to formulate

Low dosage, odorless & tasteless, compressible & soluble

You can formulate Cartidyss® in tablet, capsule, stick, liquid, softgel...



Any question?

Abyss Ingredients



Our team is at your disposal ! 😊

elodie@abyss-ingredients.com

claire@abyss-ingredients.com

www.abyss-ingredients.com



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