

# PROCARTIL

## Composition:

Each tablet contains:

Glucosamine sulphate	500mg
Ibuprofen	200mg

## Pharmacology

Osteoarthritis (OA) is the most prevalent form of arthritis, one of the most common diseases affecting humans and a common cause of disability. It is characterized by pain and progressive degeneration of cartilage in synovial joints and vertebrae, leading to significant reduction of mobility and quality of life. Hence, pharmacological treatment of arthritis involves two therapeutic goals:

- o **Analgesic & anti-inflammatory treatment:** Relief from pain and inflammation of the soft tissue surrounding the joint.
- o **Disease-modifying treatment** to treat the underlying pathology

**Glucosamine** (2-amino-2-deoxy-D-glucose), an amino derivative of glucose, is found abundantly in the human body, particularly in connective and cartilage tissue. **It serves as a substrate for biosynthesis of mucopolysaccharides and biopolymers of the articulations and bones and has been reported to facilitate the hexosamine pathway of proteoglycan synthesis.**

**Ibuprofen** is a drug of propionic acid group of non-steroidal anti-inflammatory drugs that possesses anti-inflammatory and analgesic activity. Ibuprofen inhibits the enzyme cyclooxygenase, which catalyzes the transformation of unsaturated fatty acids to prostaglandins, thereby exerting its anti-inflammatory and analgesic activity. Ibuprofen is used in the treatment of osteoarthritis due to its anti-inflammatory activity by reaching peak plasma levels within 1-2 hours and also constant synovial fluid concentration within 3 hours of administration.

## **Procartil is a synergistic combination of Glucosamine and Ibuprofen:**

The combination of Glucosamine and Ibuprofen is based on following research study conducted by Temple University researchers, published in the Journal of Pharmacology and Experimental Therapeutics (JPET). **The clinical study proved**

that the combination of Glucosamine and Ibuprofen in a 2:1 and 9:1 ratio exhibited significant dose dependence and a pronounced potency enhancement as indicated by the reduced ED<sub>50</sub>. [Normal ED<sub>50</sub> of Ibuprofen is 26.1 ± 3.4 mg/kg, ED<sub>50</sub> of Ibuprofen and Glucosamine combination is 11.0 ± 2.1 mg/kg]

Formulation	ED <sub>50</sub>
Ibuprofen	26.1 ± 3.4 mg/kg
Ibuprofen and Glucosamine combination	11.0 ± 2.1 mg/kg

### Benefits of Procartil:

The researchers at Temple University who have tested the combinations of glucosamine with Nonopioid analgesics concluded that ibuprofen combined with glucosamine in a ratio of 2:1 can render better therapeutic results, which could not be achieved by either drug alone. The combination achieves:

1. **Enhanced antinociception:** It is evident from the improved ED<sub>50</sub> of Ibuprofen in the combination.
2. **Patient Compliance:** Reduction in the doses of Ibuprofen confers better patient compliance and lesser risk of adverse reaction noted with high doses of Ibuprofen.
3. **Relief from symptoms:** Glucosamine in Procartil stimulates synthesis of glycosaminoglycan, proteoglycan and hyaluronic acid. It also enhances synovial production of hyaluronic acid. Hyaluronic acid is responsible for the high-viscosity and protective lubricating & shock-absorbing properties of synovial fluid. This in turns reduces intra-articular inflammation and relives symptoms.
4. **Stalling the disease progression:** Glucosamine in Procartil significantly increases proteoglycan in the chondrocytes [up to 38% at concentration of 10mg/L], hence arrests cascade of degenerative events at the articular level. As a result Procartil is effective in stalling the disease process.

5. **Improvement in Lequesne index:** there is a definite improvement in Lequesne index by 38%.
6. **Enhanced Safety profile:** due to lesser dosage of ibuprofen, there is relatively lesser risk of adverse reactions counting for better safety profile and long-term usage.

**Indications:**

- o **Procartil is indicated in the treatment of Osteoarthritis.**

**Contraindications:**

Procartil is contraindicated to the patients who are sensitive to any of the ingredients.

**Pregnancy & Lactation**

**Procartil** may be used during pregnancy and lactation with caution. None of the ingredients are harmful to fetus.

**Drug Interactions**

None documented. Ibuprofen being analgesic, Procartil should be prescribed with care in patients taking other analgesic, anti-inflammatory medications.

**Adverse Reactions**

There are no known adverse reactions of Procartil.

**Dosage & Administration**

The recommended dosage of **Procartil** is **one tablet 3 times daily**. The daily intake of all ingredients (Glucosamine and ibuprofen) is well within the maximum daily-recommended doses.

**Presentation**

Each blister strip of 10 tablets is available.