ISRCTN17791978 https://doi.org/10.1186/ISRCTN17791978

Clinical investigation to evaluate the safety and effectiveness of an intra-articular injection of Sinogel® in patients with knee osteoarthritis

Submission date
29/07/2025

Recruitment status
No longer recruiting

Registration date
22/09/2025

Overall study status
Completed

Last Edited
22/09/2025

Condition category
Musculoskeletal Diseases

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
IBSA Institut Biochimique S.A. (Lugano, Switzerland) is the Sponsor of the study that aimed to evaluate the safety and local tolerability of one intra-articular injection of Sinogel® in subjects suffering from knee osteoarthritis. A further objective of the study was the evaluation of the effectiveness of Sinogel® in reducing pain due to knee osteoarthritis. Sinogel® is a medical device already on the market that is approved for the treatment of pain or reduced joint mobility due to degenerative diseases, post-traumatic diseases or joint and tendon alterations. This study aimed to confirm the safety of the treatment with Sinogel® for the intended usage in agreement with its currently approved Instructions For Use leaflet. The Sponsor was willing to conduct such a study to expand the clinical experience with the device.

Who participated?
Patients aged between 45 and 80 with knee osteoarthritis.

What did the study involve?
Each participant who signed the informed consent form and was selected for participation received the same product (Sinogel®) at the same dose (1 injection in the painful knee) at the beginning of the study. He/she went to the hospital for 6 study visits and also 1 phone contact was included, for a total duration of about 7 months for each participant.
To study the safety of Sinogel®, the frequency and nature of all side effects and of all health problems in general, related or not related to the use of the device, were registered. Local parameters (like pain, reddening or swelling) in the area where the injection was performed were recorded as well.
To evaluate the performance of Sinogel® researchers looked at the pain intensity at the knee reported by the patients on a graphic scale named VAS (Visual Analogue Scale), which consists of a 10cm line with two end points representing 0 'no pain' and 10 ‘maximum pain’ and patients had to draw a vertical line corresponding to the intensity of the pain they were experiencing. The values after the injection of Sinogel®, measured up to 6 months, were compared to the values

before the injection to see if pain decreased.
The use of painkillers (paracetamol) was also evaluated as a parameter of efficacy (the more paracetamol the patients used, the less effective Sinogel® was).

What were the possible benefits and risks of participating?
Before the beginning of the study, it couldn't be confirmed that it would have helped the participants, but the information collected will help improve the treatment of people suffering from osteoarthritis. The expected benefit consisted of an enduring relief from joint pain and/or reduced joint mobility.
The study did not pose additional potential risks other than the ones associated with the intra-articular injections, even though the possible occurrence of side effects not yet known couldn't be excluded, as with all drugs and medical devices.

Where was the study run from?
IBSA Institut Biochimique (Switzerland)

When was the study starting and how long was it expected to run for?
February 2022 to September 2024

Who was funding the study?
IBSA Institut Biochimique SA (Switzerland)

Who was the main contact?
Tania Patruno, tania.patruno@ibsa.ch

Contact information

Type(s)
Public, Scientific

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Principal investigator

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Additional identifiers

Protocol serial number
22I-HASC02

Study information

Scientific Title
Open-label, multicentre, prospective investigation to evaluate the safety and effectiveness of sodium hyaluronate 2.4% and sodium chondroitin 1.6% (Sinogel®) after intra-articular injection in patients with knee osteoarthritis

Study objectives
Sinogel® is the investigational product (IP) used in the investigation. Sinogel® is a CE-marked medical device of class III that contains sodium hyaluronate 2.4% and sodium chondroitin 1.6%. The objective of the investigation was to describe the safety and local tolerability, and the performance of a single intra-articular injection of Sinogel® in patients with knee osteoarthritis.

Primary objective:
The primary objective of the investigation was to describe the safety and local tolerability of the investigational device following intra-articular treatment in patients with knee osteoarthritis.

Secondary objective:
The secondary objective of the investigation was to describe the performance of the investigational device in reducing pain following intra-articular treatment in patients with knee osteoarthritis.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 18/10/2022, Ethics Committee of the Emilia-Northern Area (Comitato Etico dell'Area Vasta Emilia Nord) (Via Gramsci 14, Parma, 43126, Italy; +390521703013; comitatoetico@ao.pr.it), ref: Reference number not provided

Primary study design
Interventional

Study design
Post-market open-label multicenter prospective clinical investigation

Study type(s)
Treatment, Safety, Efficacy

Health condition(s) or problem(s) studied
Knee osteoarthritis

Interventions
The investigational medical device used in the investigation, Sinogel®, is a CE-marked medical device available in a 3.25 ml glass syringe containing 72.0 mg hyaluronic acid sodium salt and 48.0 mg of sodium chondroitin in a buffered physiological solution.
It was administered as a single intra-articular injection at the baseline visit (Day 0) by qualified professionals.

Intervention Type
Device

Phase
Not Applicable

Drug/device/biological/vaccine name(s)
Sinogel®

Primary outcome(s)
1. Incidence and nature of treatment-emergent adverse events (TEAEs) measured using data collected from Case Report Forms (CRFs) at one timepoint
2. Incidence and nature of the Serious Adverse Device Effects (SADEs) measured using data collected from CRFs at one timepoint
3. Incidence and nature of the Adverse Device Effects (ADEs) measured using data collected from CRFs at one timepoint
4. Incidence and nature of investigational medical Device Deficiencies (DDs) measured using data collected from CRFs at one timepoint
5. Changes from baseline to any post-baseline on-site visit in vital signs (heart rate and blood pressure) measured using data collected from CRFs at one timepoint
6. Local tolerability parameters (pain, erythema, swelling and hardening in the site of injection) measured using 4/7-point scales at Day 0, Day 7 ± 2 days from the injection, Day 14 ± 2 days from the injection and Day 28 ± 2 days from the injection

Key secondary outcome(s)
1. Pain measured using a Visual Analogue Scale (VAS) for pain (0-100 mm); changes from baseline to Day 7 ± 2 days from the injection, Day 14 ± 2 days from the injection, Day 28 ± 2 days from the injection and 6 months ± 1 week from the injection
2. Use of rescue medication (paracetamol): number and proportions of users, and average tablet count per day, will be measured using data collected through a self-report diary provided to each patient and used throughout the post-baseline period

Completion date
11/09/2024

Eligibility

Key inclusion criteria
1. Voluntarily given informed consent to investigation participation in writing, encompassing consent to data recording and verification procedures

2. Male and female patients aged ≥ 45 and ≤ 80 years
3. Patients affected by knee osteoarthritis, as defined by American College of Rheumatology (ACR) clinical and radiographic criteria for OA of the knee (CIP Appendix II), and meeting the following conditions:
3.1. Kellgren-Lawrence Grade 2 to 3 severity OA of the knee according to the Investigator's judgment, with presence of osteophytes determined from X-rays of the knee obtained within 6 months from the screening visit; i.e. in the tibio-femoral compartment of the target knee with at least 1 osteophyte and measurable joint space, as diagnosed by standard X-rays (e.g. anterior-posterior view [weight bearing extension or semi-flexion] and lateral). In the case that a patient had not had a valid X-ray within 6 months prior to screening, the exam had to be performed during the screening period.
3.2. Patients suffering from OA symptoms of the target knee for at least 3 months prior to the screening visit
Note: patients with bilateral OA of the knee were allowed as long as they could differentiate pain in the target knee, did not need to use analgesics for treatment of their contralateral knee, and did not expect to receive treatment of the contralateral knee during the investigation. In the case that both knees were eligible for the investigation based on pain intensity, the knee with the greater pain measured with a 100-mm visual analogue scale (VAS) was selected as the target knee.
4. Pain in the target knee of at least moderate intensity, i.e. a score ≥50 mm on a 0-100 mm VAS for pain
5. If a female of child-bearing potential, she had to have a negative urine pregnancy test at the screening visit and use a reliable form of contraception for more than 1 month prior to Screening and throughout the investigation. Note: to be considered females of non-child-bearing potential, females had to be surgically sterile or postmenopausal as documented in medical history for at least 1 year.

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
45 Years

Upper age limit
80 Years

Sex
All

Total final enrolment
89

Key exclusion criteria
1. Patients with symptoms that might be attributable to SARS-CoV-2 at the screening visit and in the 48 hours preceding the screening visit, or patients who had contact with subjects positive to

SARS-CoV-2 in the 48 hours preceding the screening visit
2. Patients with osteoarthritis secondary to other articular diseases
3. Patients with rheumatoid arthritis or other systemic inflammatory processes
4. Patients with the presence of infections and/or skin diseases and/or skin wounds in the area to be treated
5. Patients having received:
5.1. Corticosteroids by systemic administration within 30 days prior to the screening visit (except inhaled corticosteroids)
5.2. Treatment with systemic short-acting (with a half-life less than 6 hours) non-steroidal anti-inflammatory drugs (NSAIDs) (e.g., ibuprofen, ketoprofen) within 48 hours prior to the screening visit, or long-acting NSAIDs (e.g., piroxicam, naproxen), within 7 days prior to the screening visit. Note: The use of stable low daily doses of aspirin taken for non-analgesic reasons for at least 30 days prior to inclusion was permitted.
5.3. All other analgesic therapies within 7 days prior to the screening visit (12 hours for paracetamol)
5.4. Topical anti-inflammatory drugs and analgesics at the target knee within 7 days prior to the screening visit
5.5. Intra-articular treatments administration within 30 days prior to the screening visit and/or intra-articular corticosteroids administration within 60 days prior to the screening visit
5.6. Chondroitinsulphate, glucosamine sulphate, diacereine, bisphosphonates or matrix metalloproteinase (MMP) inhibitors administration within 30 days prior to the screening visit
5.7. Viscosupplementation of the target knee within 6 months prior to the screening visit
5.8. Oral anticoagulants within 30 days prior to the screening visit
5.9. Alternative medicine (e.g. acupuncture) for treatment of the affected area within 60 days prior to the screening/baseline visit
5.10. Treatment with any other investigational product within 3 months prior to the screening visit
6. Patients having received treatments or physical therapies (i.e. laser therapy, ultrasound therapy, antalgic electrotherapy, tecar therapy, physiotherapy), which could interfere with either the local injection of the investigational device or the evaluations of investigation results within 7 days prior to the screening visit
7. Patients receiving treatment with 3-hydroxy-3-methyl glutaryl coenzyme A reductase inhibitors (statins)
8. Patients having had any previous surgery in the target knee within 6 months prior to the screening visit, or any planned surgery throughout the duration of the investigation
9. Patients having had diagnostic or surgical knee arthroscopy, or knee lavage in the target knee in the 6 months prior to the screening visit
10. Known or suspected hypersensitivity to hyaluronic acid or any other component of the investigational device and/or paracetamol
11. Patients with body mass index (BMI) > 40 kg/m2
12. Patients who were candidates for knee replacement within the next 6 months
13. Patients with a large intra-articular effusion of the target knee
14. Patients with significant pain outside the target knee, including significant hip or back pain
15. Patients with clinically significant valgus/varus deformities (>20°) or ligamentous laxity as assessed by the Investigator
16. Patients with any musculoskeletal condition affecting the target knee that would impair assessment of the effectiveness in the target knee (e.g. Paget’s disease of bone)
17. Patients who have had arthroplasty at the target knee at any time
18. Patients with the presence of serious gastrointestinal, renal, hepatic, pulmonary, cardiovascular, or neurological disease that could interfere with the outcome of the investigation or the patient’s ability to comply with investigation requirements
19. Patients with a current malignancy or who had treatment for a malignancy, except non-

melanoma skin cancer, within the past 2 years;
20. Patients with ha istory of kidney failure or renal insufficiency
21. Pregnant (positive urine test) or breastfeeding women, or planning to become pregnant or were unwilling or unable to utilize contraceptive measures (or contraception) during the investigation
22. Patients who were not able to comply with investigation procedures or who are likely to be noncompliant or uncooperative during the investigation, according to the investigator’s opinion

Date of first enrolment
13/02/2023

Date of final enrolment
01/03/2024

Locations

Countries of recruitment
Italy

Study participating centre
Azienda Ospedaliero-Universitaria di Parma
Via Gramsci 14
Parma
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43126

Study participating centre
Istituto Clinico Villa Aprica - Gruppo San Donato
Via Castelcarnasio 10
Como
Italy
22100

Study participating centre
Azienda ULSS 2 Marca Trevigiana - Ospedale di Conegliano
Via Brigata Bisagno 5
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Study participating centre
Azienda Ospedaliero Universitaria Senese - Policlinico Santa Maria alle Scotte
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Study participating centre
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Sponsor information

Organisation
IBSA Institut Biochimique (Switzerland)

ROR
https://ror.org/051tj3a26

Funder(s)

Funder type
Industry

Funder Name
IBSA Institut Biochimique SA

Results and Publications

Individual participant data (IPD) sharing plan
The data-sharing plans for the current study are unknown and will be made available at a later date

IPD sharing plan summary
Data sharing statement to be made available at a later date