

Efficacy and tolerability of 5-Loxin®, a novel standardised Boswellia serrata extract in the treatment of Osteoarthritis of knee: a randomised, double blind placebo controlled clinical trial

Submission date

22/10/2007

Recruitment status

No longer recruiting

☐ Prospectively registered

☐ Protocol

Registration date

22/11/2007

Overall study status

Completed

☐ Statistical analysis plan

☒ Results

Last Edited

06/08/2008

Condition category

Musculoskeletal Diseases

☐ Individual participant data

Plain English summary of protocol

Not provided at time of registration

Contact information

Type(s)

Scientific

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Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers

IRB#06-001

Study information

Scientific Title

Acronym

5-Loxin® OA clinical trial

Study objectives

5-Loxin® is a novel *Boswellia serrata* extract enriched to 30% 3 Acetyl-11-Keto-beta-Boswellic Acid (AKBA) (United States [US] Patent 2004/0073060A1). In carrageenan induced inflammation model, 5-Loxin® confers a significant improvement in paw inflammation in albino Wister rats. Cell based in vitro studies and in vivo experiments conducted in Sprague Dawley rats demonstrate that 5-Loxin® potentially inhibits the pro-inflammatory cytokines such as Tumour Necrotising Factor (TNF)-alpha and Interleukin-1 (IL-1)-beta (yet to be published). Furthermore, affimatrix gene chip analysis demonstrates 5-Loxin® can potentially inhibit the TNF-alpha induced gene expression of Matrix Metalloproteinases (MMPs), adhesion molecules such as Inter-Cellular Adhesion Molecule-1 (ICAM-1), Vascular Cell Adhesion Molecule-1 (VCAM-1) and mediators of apoptosis in human micro vascular endothelial cells. Importantly, extensive studies on acute and dose-dependent sub-chronic safety experiments on rats demonstrate that 5-Loxin® does not exhibit toxic manifestations even at a dose 2000 - 3000 times higher than the Human Equivalence Dose (HED). In addition, 5-Loxin® does not show genotoxicity in the standard Ames bacterial reverse mutation assay (INTOX, study no. 4477/05).

Therefore, in the present investigation, in a double-blind and placebo controlled clinical study we sought to evaluate the efficacy and safety of 5-Loxin® in treatment of Osteoarthritis (OA) of the knee.

Ethics approval required

Old ethics approval format

Ethics approval(s)

This protocol was approved by the Ethics Committee (Institutional Review Board [IRB]) of Alluri Sitarama Raju Academy of Medical Sciences (ASRAM) (India) on the 26th April 2006 (ref: # ASRAM IRB#06-001).

Study design

Randomised, placebo controlled trial

Primary study design

Interventional

Secondary study design

Randomised controlled trial

Study setting(s)

Not specified

Study type(s)

Treatment

Participant information sheet**Health condition(s) or problem(s) studied**

Osteoarthritis of knee

Interventions

75 subjects randomised into 3 groups (n = 25):

1. 5-Loxin® 2 x 50 mg/day twice daily (bid)
2. 5-Loxin® 2 x 125 mg/day (bid)
3. Placebo

Ibuprofen was used as a rescue medication for all groups. The study duration was 90 days and evaluations were at baseline, 7, 30, 60 and 90 day.

Intervention Type

Drug

Phase

Not Specified

Drug/device/biological/vaccine name(s)

5-Loxin® (Boswellia serrata extract)

Primary outcome measure

1. Visual Analog Scale (VAS)
2. Lequesne Functional Index (LFI)
3. Western Ontario and McMaster Universities osteoarthritis index (WOMAC)-pain, WOMAC-stiffness and WOMAC-physical ability

All primary and secondary outcomes are measured at baseline, 7, 30, 60 and 90 days of the study.

Secondary outcome measures

1. TNF-alpha
2. IL-1-beta
3. Interleukin-6 (IL-6)
4. C-Reactive Protein (CRP)
5. Matrix Metelloproteinase-3 (MMP-3)

All primary and secondary outcomes are measured at baseline, 7, 30, 60 and 90 days of the study.

Overall study start date

06/07/2006

Completion date

04/10/2006

Eligibility

Key inclusion criteria

1. Participants must understand risks and benefits of the protocol and able to give informed consent
2. Male and female subjects of 40 - 80 years of age
3. Females of child bearing potential must agree to use an approved form of birth control and have a negative pregnancy test result
4. Unilateral or bilateral OA of the knee for more than 3 months
5. Visual Analogue Scale (VAS) score during the most painful knee movement between 40 - 70 mm after 7 day withdrawal of usual medication
6. Lequesne's functional index score greater than 7 points after 7 days of withdrawal of usual medication
7. Ability to walk
8. Availability of the duration of the entire study period

Participant type(s)

Patient

Age group

Adult

Sex

Both

Target number of participants

75 (Seventy five)

Key exclusion criteria

1. History of underlying inflammatory arthropathy or severe Rheumatoid Arthritis (RA)
2. Hyperuricemia (greater than 440 $\mu\text{mol/L}$) and/or past history of gout
3. Recent injury in the area affected by OA of the knee (past 4 months) and expectation of surgery in the next 4 months
4. Intra-articular corticosteroid injections within the last 3 months
5. Hypersensitivity to Non-Steroidal Anti-Inflammatory Drugs (NSAIDS), abnormal liver or kidney function tests, history of peptic ulceration and upper Gastrointestinal (GI) haemorrhage, congestive heart failure, hypertension, hyperkalemia
6. Major abnormal findings on complete blood count, history of coagulopathies, haematological or neurological disorders
7. High alcohol intake (greater than 2 standard drinks per day)
8. Pregnant, breastfeeding or planning to become pregnant during the study
9. Use of concomitant prohibited medication other than ibuprofen
10. Obesity: Body Mass Index (BMI) less than 30
11. Systemic Lupus Erythematosus (SLE)

Date of first enrolment

06/07/2006

Date of final enrolment

04/10/2006

Locations

Countries of recruitment

India

Study participating centre

Department of Orthopaedics

Eluru

India

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Sponsor information

Organisation

Laila Impex R&D Center (India)

Sponsor details

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Industry

ROR

<https://ror.org/05q6g7072>

Funder(s)

Funder type

Industry

Funder Name

Laila Impex R&D Center (India)

Results and Publications

Publication and dissemination plan

Not provided at time of registration

Intention to publish date

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Not provided at time of registration

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	Results	01/04/2008		Yes	No