Inflammation Pharmacology Division

Overview

The problem of the inflammatory disorders such as rheumatoid arthritis and osteoarthritis are not unique to the developing countries but are rather global. Majority of the chronic inflammatory disorders are difficult to treat. After consuming the existing drugs such as NSAIDs and corticosteroids in particular, patients often suffer from drug related unknown side effects and toxicity that is worse than the primary disease. The main aim of inflammation pharmacology in IIIM is to evaluate and identify the natural, semi-synthetic or synthetic molecules isolated from the botanicals or synthesized for their anti-inflammatory/ anti-arthritic potential. These molecules are screened through a battery of in-vitro and in-vivo assay models to identify them to be better than the existing molecules in the market for the human use.

Missions and goals

Development of plant based anti-inflammatory/ anti-arthritic drug for human consumption which should have less toxicity, more efficacy, more acceptability, economical and devoid of side effects which are present with the existing therapeutics.

Competencies

- Anti-inflammatory activity evaluation (in-vivo)
- Anti-arthritic activity by mycobacterium and CIA induced arthritis.
- In-vitro screening of anti-inflammatory by TNF-α, IL-1β and IL-6
- Flowcytometry for cell surface markers
- Mechanistic studies.

Area of research

a) In-vivo inflammation
Acute inflammation

1) TPA induced ear inflammation (for topical application)
2) Croton oil induced ear inflammation (for topical application)
3) Arachidonic acid induced ear inflammation (for topical application)
4) Rat paw inflammation by carrageenan (for systemic administration)
5) Rat paw inflammation by dextran (for systemic administration)

Chronic inflammation

1) Mycobacterium induced developing arthritis
2) Mycobacterium induced established arthritis
3) Collagen induced arthritis in DBA-1 mice (CIA model)

b) In vitro inflammation

Estimation of the pro and anti-inflammatory cytokines viz.,
1) TNFα
2) IL-1β
3) IL-6
4) IL-10
5) IL-13
6) Cell surface markers by flowcytometry.

Facilities

- Well equipped Pharmacology laboratories at IIIM, Jammu to carry out research in the area of inflammation both in vitro and in vivo assay models.
- State-of-the-art animal house facility for maintenance of different animals’ strains
- Well equipped in-vitro labs for tissue culture studies
- A complete set-up for flowcytometry study
- State-of-the-art natural product and medicinal chemistry division for the molecule supply

Current research

Evaluation of the anti-inflammatory and anti-arthritic activity of the newly identified molecules from the botanicals and synthetic molecules.

Projects

1) Design, Synthesis of Novel Sugar-Oxasteroid-Quinones as Non-Steroidal Dissociated Glucocorticoid Receptor (GR) Agonists for Rheumatoid Arthritis
2) Assessment of pharmacological activities associated with aqueous extracts of Ocimum sanctum
3) Discovery and preclinical studies of new bioactive molecules (natural and semi-synthetic) and traditional preparations.
4) Preclinical development of botanical leads and NCEs for IND phase
# People

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<tr>
<th>S.No</th>
<th>Name</th>
<th>Expertise</th>
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<tbody>
<tr>
<td>1</td>
<td>R.A. Vishwakarma</td>
<td>Biological-Chemist and Director</td>
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<tr>
<td>3</td>
<td>Surjeet Singh</td>
<td>In-vivo inflammation</td>
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<td>4</td>
<td>Anumpa Koul</td>
<td>Immunopharmacology</td>
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<td>5</td>
<td>Asha Bhagat</td>
<td>In Vitro &amp; In Vivo anti-inflammatory studies</td>
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