Title: 3-indolyl Furanoids As Inhibitors of Matrix Metalloproteinase-9 for Prevention of Gastric Ulcer and Other Inflammatory Diseases

Technology USP

❑Novel 3-indolyl furanoid analogues unraveled the anti-inflammatory activities along with their anti-ulcerous property.

❑The antioxidant properties and significant activity to prevent gastric ulceration in vivo in mice model have been found to occur through depletion of lipid peroxidation, and via bringing superoxide dismutase activity and MMP-9 inhibitory activity to normalcy in mouse gastric tissues

Background

Nonsteroidal anti-inflammatory drugs (NSAIDs) are the most extensively used medication for pain and inflammatory conditions, although they have several drawbacks including gastric inflammation/gastropathy.

Scientific merit

We identified a unique pharmacological strategy including chemical alteration of indomethacin to convert it from ulcerogenic to antiulcer lead optimization.

- ❑ 3-indolyl furanoid derivatives inhibits MMP-9 and is responsible for curing gastric ulcers.
- ❑ The designed molecules have been investigated by the biochemical function of 3-indolyl furanoids (3g or 3c) for MMP-9 inhibition resulting in gastroprotection.

Societal Relevance

NSAIDs are taken by about 30 million people on a regular basis, although they have several drawbacks including gastric inflammation and about 107,000 individuals are hospitalized each year as a result of NSAID-related gastropathy. Thus we developed molecules which functions in the way to inhibit MMP-9 and resulting in gastroprotection.

Market size/Commercial Potential

Hospital, laboratories, the pharmaceutical industry and medical research, and drug development at initial stages to prevent gastric ulcer and other inflammatory diseases associated with Matrix Metalloproteinase-9 .

TRL

Current Technology Readiness Level (TRL): 6

USP of technology

The commercialized NSAIDs like indomethacin, ibuprofen, naproxen, etc., can harm the gastroduodenal mucosa through a variety of molecular events including suppression of gastric prostaglandin synthesis, damage in gastric epithelium, decrease in gastric mucosal blood flow, and impairment of mucus bicarbonate secretion.

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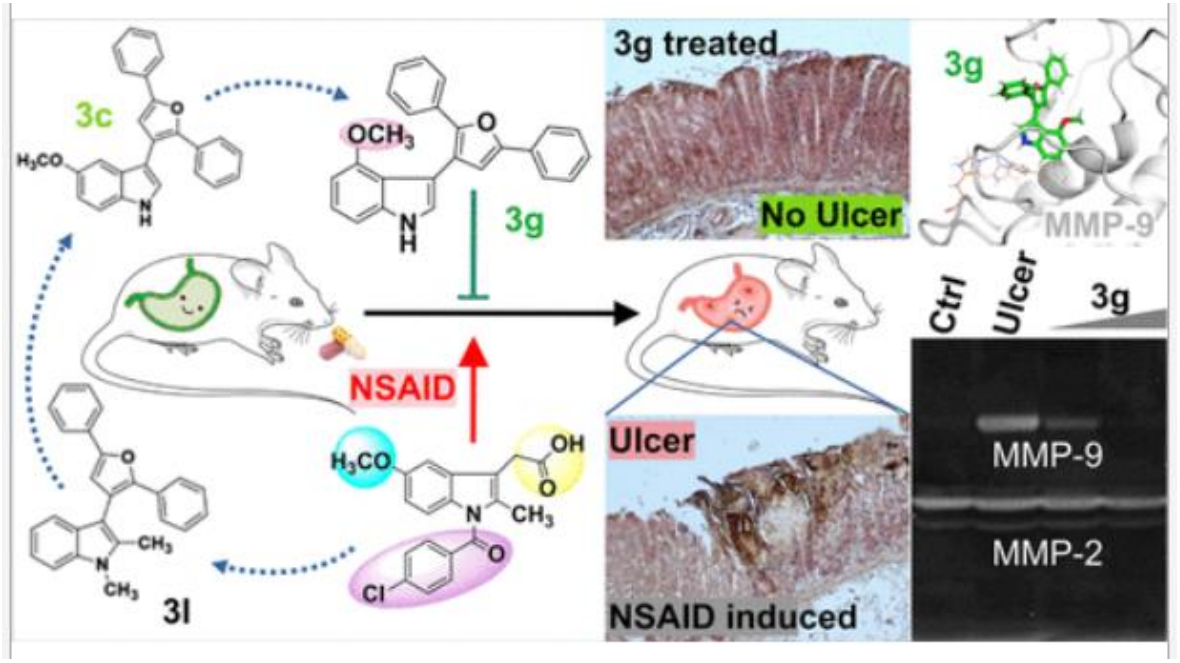
Overseas market penetration

Competing technology is not available at present. Pharma and fine chemical industry can make 3-indolyl furanoids which are useful as potent anti-inflammatory agents and prevent gastric ulcer by inhibiting matrix metalloproteinase-9 (MMP-9) expression in gastric mucosal layer.

High Resolution image of the technology prototype



Number of samples tested/validated

- ❑ In vitro and in silico studies for MMP-9 inhibitory activity was performed.
- ❑ In vivo pharmacokinetics studies were presented as the mean concentration–time profile in the rat plasma indicating the higher antiulcer potency of the developed molecules.

Cost of Sampling

Studies conducted for getting regulatory approval NIL

Any other information relevant for evaluating the technology

NIL

Patent Details

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Details of PIs, funding agency and third party, if involved in development

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