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Review Article

NON-STEROIDAL ANTI-INFLAMMATORY DRUGS (NSAID'S)¹Renuka Deshagouni, ¹Kavya Sree, ¹Furkhan, ²Chandrasekhara Rao Baru, ²Ramarao.A¹B.Pharmacy Students, Chilkur Balaji College of Pharmacy, Aziz Nagar, Hyderabad-500075²Chilkur Balaji College of Pharmacy, Aziz Nagar, Hyderabad-500075

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Abstract:

Owing the efficacy in reducing pain and inflammation, non-steroidal anti-inflammatory drugs[NSAIDS] are amongst the most popularly used medicines confirming their position in the WHO'S model list of essential medicines. with escalating musculoskeletal complications, as evident from 2016 Global burden of Disease data, NSAID usage is evidently unavoidable. These are a class of medications widely used to relieve pain, reduce inflammation, and lower fever, working by inhibition the production of prostaglandins, chemicals responsible for these bodily response; common examples of NSAIDS includes aspirin, ibuprofen, and naproxen, which are available over-the-counter for various conditions like ...headaches, muscle aches, arthritis, and menstrual cramps.

Keywords:

NSAID: Cyclooxygenase; prostaglandin; inflammation; mitochondria; organ damage; apoptosis; Gastropathy

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INTRODUCTION:

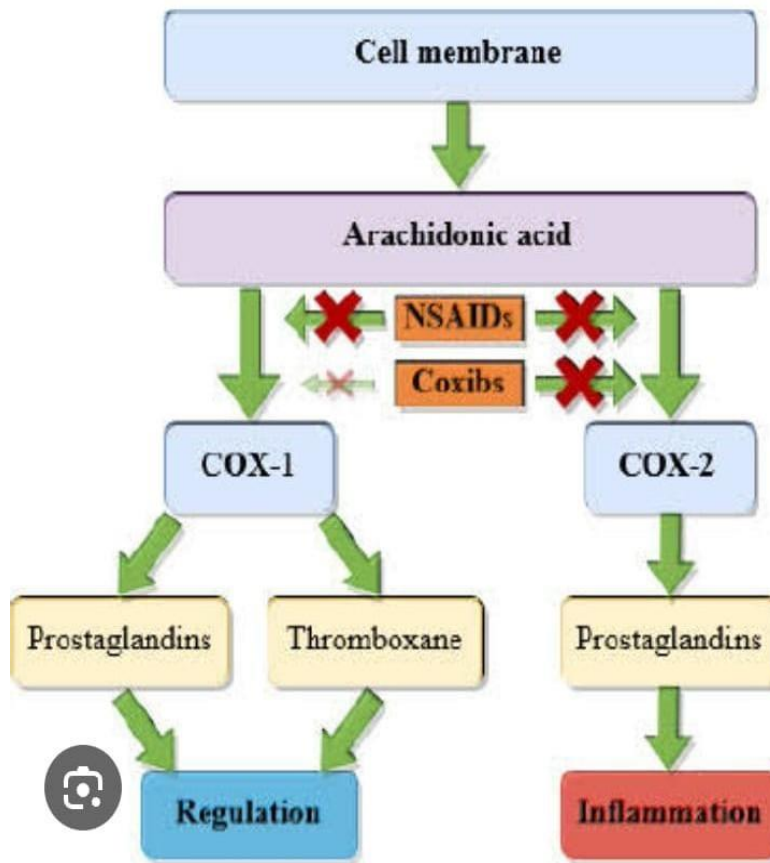
- Aspirin was the first NSAID, produced in 1897 by Felix Hoffmann of the Bayer company
- In 1989 Philip Needleman discovered the two isoforms of COX, which led to the development of COX-2 selective NSAIDs
- The first generation of COX-2-selective NSAIDs, celecoxib and rofecoxib entered clinical trials in the 1990s
- Nonsteroidal anti-inflammatory drugs (NSAIDs) are a drug class FDA-approved for use as antipyretic, anti-inflammatory, and analgesic agents. These effects make NSAIDs useful for treating muscle pain, dysmenorrhea, arthritic conditions, pyrexia, gout, migraines, and used as opioid-sparing agents in certain acute trauma cases.

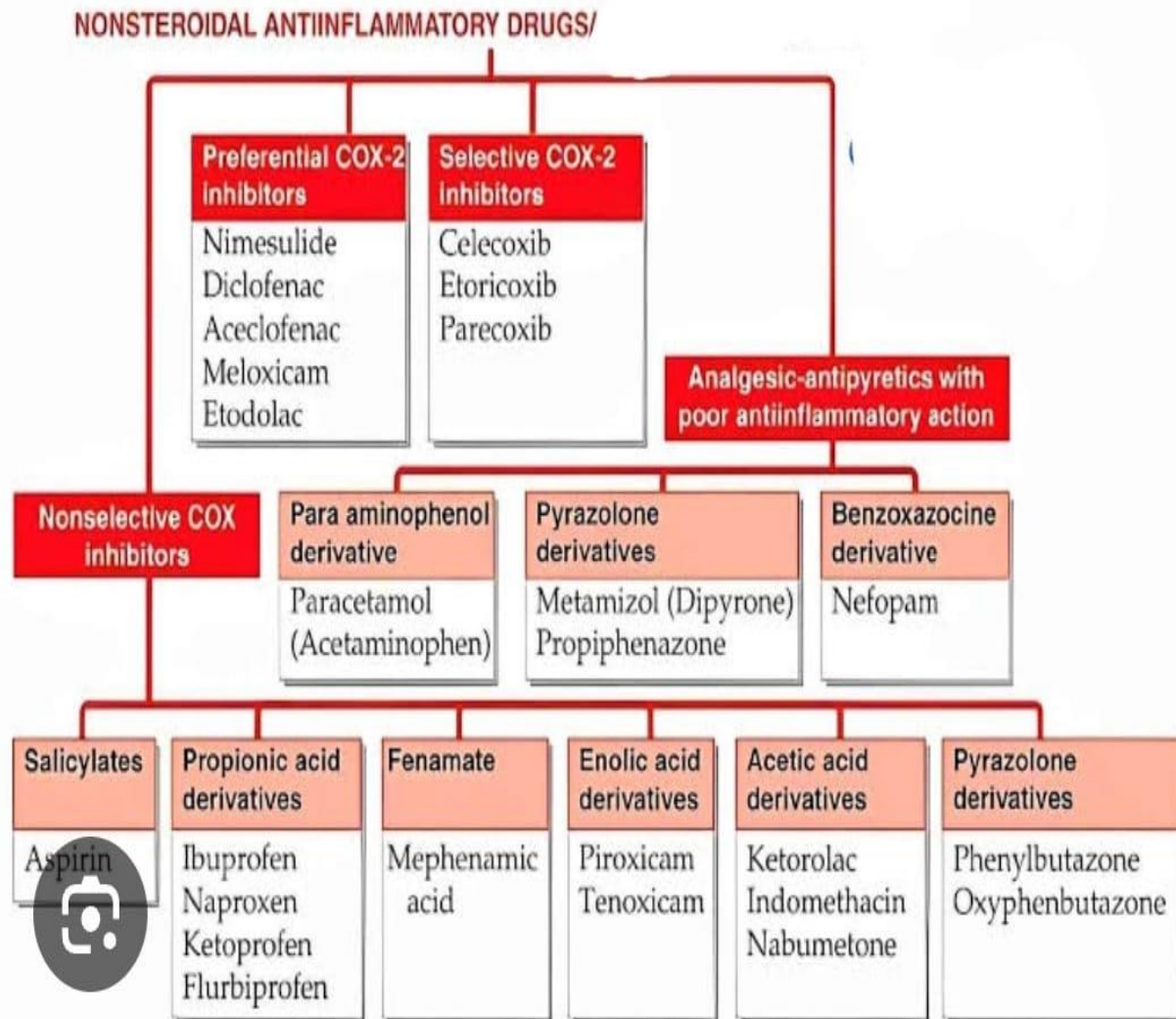
MECHANISM OF ACTION:

Nonsteroidal anti-inflammatory drugs (NSAIDs) are a class of medications used to reduce pain, inflammation, and fever by inhibiting the production of prostaglandins through enzymes called cyclooxygenases (COX), and are primarily classified based on their selectivity towards COX-1 and COX-2, with "nonselective" NSAIDs affecting both enzymes while "selective" NSAIDs primarily target COX-2, leading to potentially fewer gastrointestinal side effects; common examples include aspirin, ibuprofen, naproxen, and celecoxib.

Key points about NSAID classifications: These drugs inhibit both COX-1 and COX-2 enzymes, which can lead to more gastrointestinal side effects, including aspirin, ibuprofen, and naproxen.

Selective COX-2 inhibitors: These newer drugs primarily target COX-2, potentially causing less stomach irritation, with examples like celecoxib and etoricoxib.

**CLASSIFICATIONS OF NON-STEROIDAL ANTI INFLAMMATORY DRUGS**



NSAIDs are typically divided into groups based on their chemical structure and selectivity: acetylated salicylates (aspirin), non-acetylated salicylates (diflunisal, salsalate), propionic acids (naproxen, ibuprofen, acetic acids (diclofenac, indomethacin), enolic acids (meloxicam, piroxicam) anthranilic acids (mefenamic acid, mephenamic acid), naphthyl alanine

(nabumetone), and selective COX-2 inhibitors (celecoxib, etoricoxib).

Topical NSAIDs (diclofenac gel) are also available for use in acute tenosynovitis, ankle sprains, and soft tissue injuries.

Common Oral NSAIDs		
Generic	Brand	Max Daily Dose
OTC		
Ibuprofen	Advil, Motrin	1,200 mg
Naproxen	Aleve	1,500 mg
Prescription		
Celecoxib	Celebrex	400 mg
Diclofenac	Voltaren	200 mg
Diflunisal	N/A	1,500 mg
Etodolac	N/A	1,000 mg
Flurbiprofen	Ansaid	300 mg
Ibuprofen	N/A	3,200 mg
Indomethacin	Indocin	200 mg
Ketoprofen	N/A	300 mg
Ketorolac	Toradol	40 mg (max 5 days of total treatment)
Meloxicam	Mobic	15 mg
Nabumetone	N/A	2,000 mg
Naproxen	Naprosyn	1,500 mg
Oxaprozin	Daypro	1,800 mg
Piroxicam	Feldene	20 mg

Methods of treatment are different for acute and chronic pain. For acute pain, analgesics such as nonsteroidal anti-inflammatory drugs and opiates are

commonly used, sometimes combined with regional anesthesia, such as peripheral nerve block or peridural local anesthesia.

Adverse effects:

Non-steroidal anti-inflammatory drugs (NSAIDs) can cause a number of side effects, including gastrointestinal issues, headaches, and high blood pressure.

Gastrointestinal issues:

Indigestion, stomach aches, nausea, vomiting, and diarrhea. Stomach ulcers, which can cause internal bleeding and anemia

Bleeding in the stomach and other parts of the gastrointestinal tract

Headaches, drowsiness, and dizziness, High blood pressure

NSAIDs can raise blood pressure in some people.

Other side effects:

Allergic reactions

Fluid retention

High liver enzymes

Ringing in your ears (tinnitus)

Photosensitivity (greater sensitivity to light)

Unexplained bruising and bleeding

Wheezing, trouble breathing or unusual cough

Chest pain, rapid heartbeat, palpitations

Fatigue

Flu-like symptoms

Side effects are more common if you're taking high doses for a long time, or you're elderly or in poor general health. Over-the-counter NSAIDs generally have fewer side effects than stronger prescription medicines.

CONCLUSION:

A Great deal of progress has been made toward developing novel anti-inflammatory agents. In spite of the tremendous advances in the last decade, the development of a safe, effective and economical therapy for treating inflammatory conditions still presents a major challenge. Prolonged use of non-steroidal anti-inflammatory drugs leads to many adverse effects.

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