

# OBJECTIVE OUTLINE

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- × Definition NSAIDs
- × Groups of NSAIDs
- × Definition of Antipyretic Drugs
- × Pharmacokinetic of Drugs
- × Mechanism of Action
- × Drugs for Antipyretic
- × Adverse Effect
- × Management of Drugs Toxicity
- × Patient Education

# DEFINITION OF NSAIDs

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‘NSAIDs is any one of a large group of **drugs used for pain relief**, particularly in rheumatic disease associated with inflammation but also in dysmenorrhoea and metastatic bone disease’.

# GROUP OF NSAIDs

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## Classes of NSAIDs

Analgesic

**Antipyretic**

Anti  
inflammatory

# DEFINITION OF ANTIPYRETIC

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‘A drug that **reduces fever** by **lowering the body temperature**’.

8<sup>th</sup> Edition 2010, Oxford University Press, Oxford Concise Colour Medical Dictionary, Page 43

Some analgesic drugs have antipyretic activity.

# PHARMACOKINETICS OF DRUGS

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- ✘ Absorption : stomach, intestinal mucosa
- ✘ Distribution: blood plasma
- ✘ Metabolism: liver
- ✘ Excretion: in urine, bile

# MECHANISM OF ACTION

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Activities of antipyretic:

- ✘ Used to treat fever.
- ✘ Inhibits the enzyme COX.
- ✘ Fever → release of endogenous pyrogens (e.g., interleukin-1) released from leucocytes → acts directly on the thermoregulatory centers in hypothalamus → increase body  $T^{\circ}$ .
- ✘ This is assoc with increase in brain PGs (pyrogenic).
- ✘ Aspirin prevents the  $T^{\circ}$ -rising effects of interleukin-1 by preventing the increase in brain PGs.

# DRUGS FOR ANTIPIRETTIC

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- ✘ Aspirin
- ✘ Paracetamol / Acetaminophen

# ASPIRIN

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- ✘ Indication: mild to moderate pain
- ✘ Contraindication: gastric and duodenal ulcer, hemorrhagic diathesis, hypersensitivity to aspirin or other NSAIDs, children under 12 y/o. hypersensitivity (attacks to asthma, angioedema, urticaria or rhinitis; pregnancy (third trimester); PT with hemophilia or hemorrhagic disorder; gout; severe renal or hepatic impairment; lactation
- ✘ Action: antiplatelet, antirheumatic, antipyretic.
- ✘ Dosage: 300 – 900 mg 4-6 hours. Max. 4 g daily. Children not recommended.



# ASPIRIN CONT..

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- ✘ Adverse effect: gastric hemorrhage, hypersensitivity, thrombocytopenia, GI disturbance, prolonged bleeding time, rhinitis, urticaria, epigastric discomfort, angioedema, salicylism, tinnitus, broncho spasm
- ✘ Interaction: Acetazolamide, Dipyridamol; salicylate toxicity (vomiting, tachycardia, hyperpnea, mental confusion) or acetazolamide toxicity (fatigue, lethargy, somnolence, confusion, hyperchloremic metabolic acidosis) Alentronate: GI stress, antacids, calcium, alcohol, cortocosteroids, phenylbutazone, and oxyphenbutazone may increase risk of GI ulceration. Aspirin increases phenytoin levels. May antagonize actions of uricosurics and spironolactone

# PARACETAMOL / ACETAMINOPHEN

- × PARACETAMOL 120 mg/5 ml Syrup
- × Indications : Mild to moderate pain and pyrexia.
- × Dosage : Child :
  - up to 1 year : 60 – 120 mg.
  - 1 – 5 years : 120 – 240 mg.
  - 6 – 12 years. 240 – 480 mg per dose.Repeat every 4 – 6 hours when necessary.  
Maximum of 4 doses in 24 hours.

# PARACETAMOL / ACETAMINOPHEN CONT...

- ✘ Contraindications : Nephropathy.
- ✘ Precautions : Renal and hepatic failure.  
Avoid chronic use.
- ✘ Interactions : Anticoagulants, alcohol, liver enzyme inducers, aspirin, chloramphenicol and phenobarbitone.
- ✘ Adverse Reactions : Allergic reactions, skin rash.

# PARACETAMOL / ACETAMINOPHEN CONT...

- ✘ Indications : Symptomatic relief of fever and post operative pain for pediatric cases.
- ✘ PARACETAMOL 125 – 250 mg Suppository
- ✘ Dosage : Child 1 – 5 years : 125 – 250 mg. 6 – 12 years : 250 – 500 mg. 3 – 11 month : 80 mg inserted every 4 – 6 hours if necessary. Maximum 4 doses in 24 hours. Infants : under 3 month should not be given paracetamol unless advised by doctor; a dose of 10 mg/kg (5 mg/kg if jaundice) is suitable.

# PARACETAMOL / ACETAMINOPHEN CONT...

- × Paracetamol 500 mg tablet
- × Dosage: adult; 500-1000mg every 4-6 hours, max. of 4 g daily.

# GENERAL ADVERSE EFFECT

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- × CNS: headache, tinnitus, dizziness
- × CVS: fluid retention hypertension, edema, CHF (rarely)
- × GI: abdominal pain, dysplasia, nausea, vomiting, ulcer or bleeding (rarely)
- × Hematologic: rare thrombocytopenia, neutropenia, or even aplastic anemia
- × Hepatic: abnormal liver function test and rare liver failure
- × Pulmonary: asthma
- × Rashes: all types pruritus
- × Renal: renal insufficiency, renal failure, hyperkalemia, and proteinuria

# MANAGEMENT OF DRUGS TOXICITY

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- × Gastric lavage
- × Peritoneal dialysis
- × Activated charcoal
- × Hemodialysis
- × Intramuscular vit. K
- × Antidote
- × IV fluid and electrolyte supplements

# PATIENT EDUCATION

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- ✘ Follow the instruction by doctor
- ✘ Inform the dentist if the patient take aspirin
- ✘ Patient with renal failure should notify the doctor
- ✘ Explain to the patient about the effect of drugs
- ✘ Avoid drugs overdose