

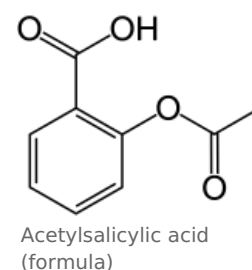
Acetylsalicylic acid

Aspirin:



Acetylsalicylic acid (ASA) or more commonly known as **aspirin** is a nonsteroidal anti-inflammatory drug (NSAID, NSA) used as an analgetic, antipyretic, antiphlogistic (anti-inflammatory) and antithrombotic drug. It is therefore used to treat pain, fever, inflammation, but also has the potential to reduce major adverse cardiovascular events by inhibiting platelet aggregation - preventing blood clot formation which could lead to stroke or myocardial infarction (MI). ^[1]

Trade names of acetylsalicylic acid: Acylpyrin®; Aspirin®



Mechanism of action

Chemically, acetylsalicylic acid is a derivative of salicylic acid, which belongs to aromatic hydroxy acids. It **irreversibly inhibits** (by means of acetylation) the enzyme **cyclooxygenase (COX)** both type 1 and 2 but has a greater affinity to COX-1. COX-1 is a constitutive enzyme, while COX-2 is inducible. By inhibiting the COX enzymes, acetylsalicylic acid **blocks the synthesis of eicosanoids** (prostaglandins, prostacylin, thromboxanes, ...) from arachidonic acid.

Dosing

- Low dose (75-100 mg daily) – inhibition of platelet aggregation
 - Low dose of aspirin is recommended as a long-term aspirin therapy in prevention of cardiovascular disease events (stroke, MI).
- Intermediate dose (< 3000g /day) – antipyretic and analgesic effect of aspirin
- High dose (> 3000g /day) – anti-inflammatory effect of aspirin
 - Aspirin is an effective anti-inflammatory agent in rheumatic disorders, but high doses of aspirin result in toxicity, including tinnitus, hearing loss and gastric intolerance. ^[2]

⚠ Giving **aspirin to children under 12 years of age is not recommended** due to the risk of Reye's syndrome, which is a rare but severe case of acute encephalopathy and hepatic steatosis in children and adolescents.

References

Related articles

- Non-steroidal anti-inflammatory drugs (NSAIDs)
- Non-opioid analgesics
- Reye's Syndrome

External links

- Aspirin (English Wikipedia) (<https://en.wikipedia.org/wiki/Aspirin>)
- Aspirin (DrugBank Online) (<https://go.drugbank.com/drugs/DB00945>)
- Aspirin in the primary prevention of cardiovascular disease (UpToDate) (<https://www.uptodate.com/contents/aspirin-in-the-primary-prevention-of-cardiovascular-disease-and-cancer-beyond-the-basics#:~:text=To%20summarize%2C%20daily%2C%20low%2D,the%20risk%20of%20major%20bleeding.>)

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1. National Center for Biotechnology Information. *PubChem Compound Summary for CID 2244, Aspirin* [online]. National Library of Medicine, [cit. 2022-11-13]. <<https://pubchem.ncbi.nlm.nih.gov/compound/Aspirin>>.
2. Up To Date. *Aspirin: Mechanism of action, major toxicities, and use in rheumatic diseases* [online]. The last revision October 2022, [cit. 2022-11-13]. <<https://www.uptodate.com/contents/aspirin-mechanism-of-action-major-toxicities-and-use-in-rheumatic-diseases>>.

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