RESEARCH PAPER

# Aceclofenac: A Safer Alternative Among NSAIDs?

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**ABSTRACT**

Non-steroidal anti-inflammatory drugs (NSAIDs) are among the most widely prescribed medications globally for the management of pain, inflammation, and fever. They exert their pharmacological effects primarily through inhibition of cyclooxygenase (COX) enzymes, thereby reducing prostaglandin synthesis. Despite their effectiveness, NSAIDs are associated with significant gastrointestinal, renal, and cardiovascular adverse effects. This review summarizes the pharmacology, classification, dosing considerations, clinical uses, and safety concerns of NSAIDs.

Aceclofenac is a widely used non-steroidal anti-inflammatory drug (NSAID) with preferential cyclooxygenase-2 (COX-2) inhibition. It is commonly prescribed in dental practice for the management of pain and inflammation associated with various oral conditions and procedures. This review highlights its pharmacological properties, clinical uses in dentistry, comparative efficacy, and safety profile.

**KEYWORDS:** Aceclofenac, Paracetemol, COX

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## Introduction

Aceclofenac is a widely used non-steroidal anti-inflammatory drug (NSAID) belonging to the class of preferential cyclooxygenase-2 (COX-2) inhibitors and is structurally related to Diclofenac.[1] It is commonly prescribed for the management of pain and inflammation in various musculoskeletal and rheumatologic conditions. The drug exerts its pharmacological action primarily through inhibition of the cyclooxygenase enzymes, particularly showing greater selectivity toward COX-2 compared to COX-1. This selective inhibition leads to a reduction in the synthesis of prostaglandins, which are key mediators of inflammation, pain, and fever. In addition to prostaglandin inhibition, aceclofenac has been shown to suppress the production of pro-inflammatory cytokines such as interleukin-1 (IL-1) and tumor necrosis factor-alpha (TNF-α), contributing to its anti-inflammatory effects. Some studies also suggest that aceclofenac may promote cartilage matrix synthesis and inhibit cartilage degradation, indicating potential chondroprotective properties, which make it particularly useful in chronic joint diseases such as osteoarthritis.[2]

Pharmacokinetically, aceclofenac is well absorbed following oral administration, with a bioavailability approaching 100%, and peak plasma concentrations are typically reached within 1 to 3 hours. The drug is highly protein bound (approximately 99%), allowing for sustained therapeutic levels in circulation. It distributes effectively into synovial fluid, which is beneficial in treating joint-related disorders. Aceclofenac undergoes extensive hepatic metabolism, and an important aspect of its biotransformation is its partial conversion into diclofenac, which also contributes to its therapeutic effects.[1] The elimination half-life of aceclofenac is approximately 4 hours, and it is primarily excreted via the kidneys in the form of metabolites. Despite its relatively short half-life, its pharmacodynamic effects allow for convenient twice-daily dosing.

Clinically, aceclofenac is indicated in a variety of painful and inflammatory conditions, including dental pain, osteoarthritis, rheumatoid arthritis, ankylosing spondylitis, and other musculoskeletal disorders such as low back pain, soft tissue injuries, and post-operative pain.[3] One of the major advantages of aceclofenac over

traditional non-selective NSAIDs such as Ibuprofen is its improved gastrointestinal tolerability. This is attributed to its preferential inhibition of COX-2, sparing COX-1, which is responsible for maintaining gastric mucosal integrity. As a result, aceclofenac is associated with a lower incidence of gastric irritation, ulceration, and bleeding compared to many conventional NSAIDs, making it a preferred choice for long-term therapy in chronic conditions.

Aceclofenac is widely used in dentistry because it provides effective relief from pain and inflammation commonly associated with procedures such as tooth extractions, root canal treatments, and periodontal conditions. Its preferential inhibition of COX-2 results in strong analgesic and anti-inflammatory effects with comparatively fewer gastrointestinal side effects than traditional NSAIDs like Diclofenac. Additionally, its convenient twice-daily dosing and good patient tolerability improve compliance, making it a preferred choice for managing acute dental pain.[2]

The usual recommended dose of aceclofenac in adults is 100 mg administered twice daily, typically after meals to minimize gastrointestinal discomfort.[4] The drug is generally well tolerated, but like all NSAIDs, it is not devoid of adverse effects. Common side effects include dyspepsia, nausea, abdominal pain, and diarrhea. Serious adverse effects, although less frequent, may include gastrointestinal ulceration and bleeding, hepatotoxicity, renal impairment, and hypersensitivity reactions. Similar to other NSAIDs, aceclofenac may increase the risk of cardiovascular events such as myocardial infarction and stroke, particularly with prolonged use or in patients with pre-existing cardiovascular disease.

Aceclofenac is contraindicated in patients with active peptic ulcer disease, severe hepatic or renal impairment, known hypersensitivity to NSAIDs, and in the third trimester of pregnancy due to the risk of premature closure of the ductus arteriosus. Caution is advised when prescribing aceclofenac in elderly patients and in those with a history of gastrointestinal disorders, cardiovascular disease, or renal dysfunction. Drug interactions are an important consideration in clinical practice; aceclofenac may potentiate the effects of anticoagulants, thereby increasing the risk of bleeding.[5] It may also reduce the efficacy of antihypertensive agents such as ACE inhibitors and diuretics and increase the risk of nephrotoxicity when used concurrently with these drugs. Concomitant use with other NSAIDs or corticosteroids further increases the risk of gastrointestinal complications.

In comparison with other NSAIDs, aceclofenac occupies an important place due to its balanced efficacy and safety profile. While drugs like diclofenac are potent anti-inflammatory agents, they are associated with a higher risk of gastrointestinal side effects. On the other hand, selective COX-2 inhibitors such as Celecoxib offer better gastrointestinal safety but may carry a higher cardiovascular risk.[4] Aceclofenac provides a middle ground with effective symptom control and relatively improved tolerability. Its possible chondroprotective action further enhances its value in degenerative joint diseases.[5]

In conclusion, aceclofenac is a well-established NSAID with preferential COX-2 inhibition, offering effective analgesic and anti-inflammatory effects with comparatively better gastrointestinal safety.[5] Its favorable pharmacokinetic profile, clinical efficacy in a wide range of conditions, and tolerability make it a commonly prescribed drug in clinical practice, especially for chronic inflammatory disorders. However, like all NSAIDs, careful patient selection, appropriate dosing, and monitoring are essential to minimize potential adverse effects and ensure safe use.[6]

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