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Synthesis and Anti-Inflammatory Activity of Pyrazol-3-yl Thiazole 4-Carboxylic Acid Derivatives Targeting Enzyme in the Leukotriene Pathway

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Abstract : Pyrazole scaffold is an important group of compound in heterocyclic chemistry and is found to possess numerous uses in chemistry. Pyrazole derivatives are also known to possess important biological activities including antitumor, antimicrobial, antiviral, antifungal, anticancer and anti-inflammatory. Inflammation is associated with pain, allergy and asthma. Leukotrienes are mediators of various inflammatory and allergic disorders. 5-Lipoxygenase (5-LOX) is an important enzyme involved in the biosynthesis of leukotrienes and metabolism of arachidonic acid (AA) and thus targeted for anti-inflammation. In vitro inhibitory activity of pyrazol-3-yl thiazole 4-carboxylic acid derivatives is tested against enzyme 5-LOX. Most of these compounds exhibit good inhibitory activity against this enzyme. Binding mode study of these compounds is determined by computational tool. Further experiments are being done to understand the mechanism of action of these compounds in inhibiting this enzyme. To conclude, these compounds appear to be a promising target in drug design against 5-LOX.

Keywords : inflammation, inhibition, 5-lipoxygenase, pyrazole
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