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Editorial

Sulfonamides: A Promising Pharmacophore as Carbonic Anhydrase Inhibitor

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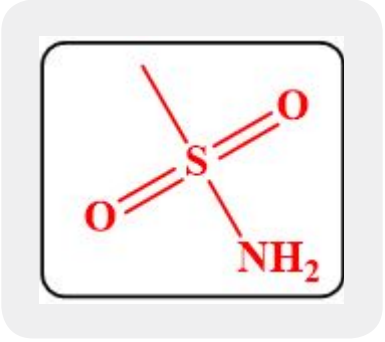

Figure: *Sulfonamides functional group*

Sulfonamides are important pharmacophores which are extensively employed as antifolic agent by acting as competitive inhibitors of dihydropteroate synthase enzyme. These are structurally similar to *p*-aminobenzoic acid (PABA) which is cofactor for synthesis of folic acid by bacteria. So as an analog of PABA, sulfonamides can compete with it efficiently to prevent synthesis of proteins and nucleic acid which result the inhibition of various microorganisms.

Moreover, a sulfonamide is versatile moiety for its diverse pharmacological activities that include antibacterial, antifungal, anti-inflammatory and enzyme inhibition. Sulfonamide are in clinical use as carbonic anhydrase inhibitors (CAIs) primarily as diuretics and anti-glaucoma agents. Carbonic anhydrases (CAs) are zinc containing metalloenzymes which involves in interconversion of carbon dioxide and water to bicarbonate and proton to maintain acid-base balance in tissues and blood.

To date 15 different human CAs are known that are widely distributed in different tissues involved in different physiological process such as cell differentiation and proliferation, pH homeostasis, neurotransmission and pathologies like diuretics, epilepsy, glaucoma, obesity and cancer. Important pathological consequences results by abnormal activities and/or irregular expression of CAs.