

## Editorial

Dear Readers,

The present copy of the journal *Current Enzyme Inhibition* (CEI) is the inaugural issue of the journal. CEI is a review journal which has been started to provide the scientific community involved in the studies of structure, function, and inhibition of the enzymes with a comprehensive coverage of the inhibitory aspects of the different enzymes. Inhibitors of enzymic reactions have acquired a very vast dimension in biochemical, biophysical, medical, and pharmaceutical research and in the treatment of a large number of diseases. They are used to study specific intracellular functions and related processes and provide tools by which the mechanisms of ligand binding, enzymic catalysis, and other aspects of enzyme chemistry can be elucidated. Blockades of the functions of various enzymes act as the favored targets for the development of drugs against several diseases. The inhibition study thus has become a very fascinating area of research for biochemists, medicinal chemists, and pharmaceutical scientists. Consequently, a huge number of papers are being published every year on enzyme inhibition-related studies in different journals. It has made difficult to have a track of all developments on a particular enzyme of one's interest, and thus a need was felt to provide a comprehensive and cohesive coverage on all inhibitory studies related to a particular enzyme. With this aim, Bentham Science has started the *Current Enzyme Inhibition*, wherein the leading scientists from all over the world are invited to contribute the review articles on the topics in which they have expertise. Each issue would aim to publish a series of timely in-depth reviews written by leaders in the fields on some important topics related to enzyme inhibition. The present issue contains nine articles, covering a variety of interesting topics.

In article 1, Toshiaki Ishii has reviewed the role of integrin-linked kinase (ILK) in neuronal cells. Recent studies demonstrated that ILK interacts with and regulates many different signaling pathways in neuronal cells, which implies an important role for ILK in a variety of neuronal functions. This article discusses the role of ILK in neuronal cells and also the possible involvement of ILK in neuronal disorders. In article 2, Jeng and Hou discuss about sesamin and sesamolins—nature's therapeutic lignans. Sesamin (SA) and sesamolins (SO) are major lignans (a non-fat constituent) in sesame seed oil, inhibit 5-desaturase activity and cause accumulation of dihomogammalinolenic acid (DGLA), a precursor of 1-series prostaglandins. In article 3, Norbert Seidler presents an account of carbonyl-induced enzyme inhibition in which he describes the way carbonyl-containing (and particularly glycation) agents react with protein residues elucidating mechanisms that include two broad categories: direct reaction (1) with active site residues and (2) with residues distinct from the active site. Article 4, which has been written by Spyroulias and Cordopatis, presents current inhibition concepts of zinc metalloproteinases involved in blood pressure regulation. Certain zinc metalloproteinases, such as angiotensin converting enzyme (ACE), neutral endopeptidase (NEP) and

endothelin converting enzyme (ECE), play a key role in vascular homeostasis through their proteolytic activity in various vasoactive peptides. Spyroulias and Cordopatis discuss a new class of promising compounds, namely vasopeptidase inhibitors, which represent a new concept in hypertension and cardiovascular disease therapeutics. They contemporarily inhibit the catalytic function of more than one of the above enzymes and are undergoing extensive clinical trials exhibiting increased efficacy in hypertension treatment and higher risk for side-effects such as angioedema when compared to ACE inhibitors. In the next article, Suk describes the role of caspases in the activation-induced cell death (AICD) of neuroglia. Caspases may be a target for the modulation of neuroglial AICD that has implications in neurodegenerative diseases. In article 6, Thomas and Tikellis present an account of angiotensin converting enzyme 2 (ACE2) and discuss that ACE2 may also have important functional consequences in heart failure and pre-eclampsia and that its selective inhibitors may provide important tools for exploring the physiology and pathology of the enzyme in both health and disease states. Bo Ahrén describes, in article 7, the inhibition of dipeptidyl peptidase-4 (DPP-4), a novel approach to treat type 2 diabetes. The novel approach for the treatment of type 2 diabetes is based on the gut hormone glucagon-like peptide-1 (GLP-1), which is antidiabetic due to its combined action to stimulate insulin secretion, increase beta-cell mass, inhibit glucagon secretion, reduce the rate of gastric emptying and induce satiety. The inhibition of DPP-4 can increase the level of endogenous active GLP-1 and prolong its half-life. Recently, a considerable interest has developed in the study of inhibitors of protein kinase. Mitogen activated protein kinases (MAPKs), a group of Ser/Thr protein kinases, are activated by a wide spectrum of extracellular stimuli. Extensive literature reports have indicated the key role of these kinases in inflammatory processes and in immune response. A review by Ropert ( article 8) outlines relevant aspects on the development of MAPK inhibitors that could form the molecular basis for a new class of anti-inflammatory and immunoregulatory agents. Lastly, an article by Reyes-Parada *et al.* discusses monoamine oxidase (MAO) inhibition in the light of new structural data. The recent description of the crystal structures of rat MAO-A and human MAO-B provides an unprecedented framework to elucidate the mechanisms underlying the selective interactions between these proteins and their ligands. Reyes-Parada *et al.* present a detailed account of this. I thank all the authors of this issue for their excellent stimulating contributions and hope that readers will greatly enjoy reading these articles as I did and that these contributions will be of great value to those involved in the studies of enzyme inhibition.

**S. P. Gupta**

Editor-in-Chief

Department of Chemistry

Birla Institute of Technology and Science

Pilani-333031, India

Tel: +91-1596-242126, ext. 414 (O); +91-1596-242816 (R)

Fax: +91-1596-244183

E-mail: spg@bits-pilani.ac.in