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Editorial

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Role of RAGE, sRAGE & esRAGE In Inflammation & Diseases

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Receptor for advanced glycation end product (RAGE) is a mutliligand pro-inflammatory pattern recognition receptor (PRR) and plays a role in in many pathologic conditions like diabetes, cancer, cardiovascular and neurodegenerative diseases. It belongs to the immunoglobulin superfamily of cell surface molecules and contains one V-type and two C-type immunoglobulin (Ig) domains in extracellular region [1-3].

RAGE can produce reactive oxygen species (ROS), immunoinflammatory effects, cellular proliferation, or apoptosis when ligands bind to extracellular domain stimulating intracellular signaling cascade. Thus, it may become important target to explore the novel therapeutic inhibitors of RAGE. Soluble receptor for AGE (sRAGE) is a decoy receptor and involves in controlling ligand-RAGE signaling and consequent cellular and tissue disorder [4, 5]. Endogenous secretory RAGE (esRAGE) is also major splicing of RAGE which can be detected in endothelial cells, pancreatic β-cells etc. These sRAGE and esRAGE may play a part in against the ligand [6, 7].

It is reported that RAGE is involved in chronic inflammatory conditions like periodontitis and sRAGE is a biomarker to monitor the severity of the disease condition. RAGE expression was significantly increased in periodontitis affected gingival tissues but soluble RAGE (sRAGE) and cleaved RAGE (cRAGE) were significantly decreased and unchanged in esRAGE level [8].

RAGE is also involve in respiratory diseases like asthma, pneumonia, chronic obstructive pulmonary disease (COPD) and lung cancer and plays a major role in inflammatory responses. It was showed that sRAGE was positive correlation with lung functions and biomarker of COPD disease [9]. Moreover, total sRAGE and esRAGE level have significant positive correlation in the lung and systemically [10, 11].

In one study, sRAGE is increased in both diabetes type 1 and type 2 patients with reduced renal function. Even, low level of sRAGE is a good biomarker for disease other than diabetes and renal disease. But, sRAGE is a prognostic tool in diabetic retinopathy (DR) and an endogenous protective factor against DR. In nonproliferative DR (NPDR) and proliferative DR (PDR) patients, serum sRAGE levels were significantly decreased than in patient without retinopathy and controls [12-13].

In conclusion, relations between RAGE, sRAGE & esRAGE may also be a key role in exploring new therapeutic agents against inflammatory disorders and diseases.

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