

**Antimicrobial and Immunomodulatory effects of novel
synthetic peptides**

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ANTIMICROBIAL AND IMMUNOMODULATORY EFFECTS OF NOVEL SYNTHETIC PEPTIDES

ABSTRACT:

Considering the role of Anti –Inflammatory drugs, ISSAR PHARMACEUTICALS have patented molecule # US 9,487,560 B2 with the capacity to modulate Angiogenic activity. The lead molecule IS 217 is developed by ISSAR PHARMACEUTICALS PVT.LTD. Previous studies have shown that the synthetic peptide recombinant IS 217 triggers a signaling cascade which reduces levels of TNF- α and IL-12, and increases IL-10 in macrophages. Because TNF-a is a major mediator of the pathophysiology of sepsis and blocking inflammation is a possible line of therapy in such circumstances, we tested the efficacy of IS 217 in reducing symptoms of sepsis in a mouse model of cecal ligation and puncture–induced sepsis. IS 217 significantly decreased levels of serum TNF- α , IL-1b, IL-6, and IL-12 and reduced organ damage in mice. IS 217 was able to reduce sepsis-induced mortality when given prophylactically or therapeutically and improved survival. Our studies show that IS 217 has potent anti-inflammatory properties and can serve as a novel therapeutic to control sepsis.

INTRODUCTION

Sepsis is a syndrome caused by an abnormal host response to infection. The infection is mostly due to bacteria but can also be due to viruses, fungi, or parasites. It is a major cause of mortality especially in hospitals (1). Many survivors have profound disabilities, such as amputated limbs, blindness, and cognitive problems. Sepsis leads to an overwhelming inflammatory response in the host, which manifests as well-known clinical symptoms (fever, tachycardia, leukocytosis) and the accompanying systemic inflammatory response syndrome (2). In sepsis, infection overstimulates the host immune response by activating monocytes/macrophages, neutrophils, and endothelial cells. The activation of these cells results in an elaborate and extensive array of pro inflammatory mediators, which includes cytokines such as TNF-a, IL-1b, IL-6, and IL-8, as well as lipids, oxygen and nitrogen radical intermediates, components of the complement cascade, catecholamines, histamines, and others. The chemical mediators can cause local damage to cells and systemic toxic effects (3–5). Although sepsis is known to be a complex condition which involves immune