Immunomodulatory Effect of “Dr. M.S. Reddy’s Multiple Mixed Strain Probiotic Therapy” to Cure or Prevent Hospital Acquired (Nosocomial) Infections due to *Clostridium difficile* (*C. diff*), other Pathogenic Bacteria, and Autoimmune Diseases

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**ABSTRACT**

The worldwide popularity of Dr. M.S. Reddy’s Multiple Mixed Strain Probiotic Therapy to treat or prevent the hospital acquired infections (nosocomial infections) arose a great interest in the medical community around the world (Reddy and Reddy, 2016; 2017). The following questions were raised on this subject: Does Multiple Mixed Strain Probiotics directly inhibit the pathogenic bacteria (*C. diff*) in the gastrointestinal tract or indirectly through modulation of the host immune system or both? To be more specific, what is the exact and/or hypothetical mechanism at molecular level behind the breakthrough discovery of Dr. M.S. Reddy’s Multiple Mixed Strain Probiotic Therapy? To answer these questions, the specific immunomodulation regulatory functions of the individual Probiotic strains (on host) have been researched, investigated and outlined in this article. A detailed explanation(s) and hypotheses have been proposed outlining the possible cumulative direct bacteriological and indirect immunomodulatory effects (at the molecular level) of the Multiple Mixed Strain Probiotics used in Dr. M.S. Reddy’s Multiple Mixed Strain Probiotic Therapy to successfully treat *C. diff* infection. A detailed scientific and research attempts were made to correlate the Probiotic induced immune activities in relation to the reduction of the symptoms associated with the hospital acquired *Clostridium difficile* infection during and after the Multiple Mixed Strain Probiotic Therapy. Results of the clinical trials, microbiological tests on feces, and the clinical blood tests significantly revealed that the reasons for the success of Dr. Reddy’s Multiple Mixed Strain Probiotic Therapy are multifold. Presumably, it is predominantly due to the immunomodulatory effect they have exerted on the host immune system along with the direct inhibition of *C. diff* bacteria by multiple Probiotics, due to the production of bacteriocins, lactic acid and nutritional competency. In addition, the size of the individual cells of the Probiotic strains in the Multiple Mixed Strain Probiotics and their significant effect on immunomodulation has been thoroughly discussed. Results clearly proved that if Probiotics are absent in the GI tract during *C. diff* infection, the chances of patient survival is zero. This is because of the excess immune stimulation and incurable damage to the epithelial cell barrier of the gastrointestinal tract caused by *C. diff* bacteria. The results also revealed, without any doubt, as of to-date the latest discovery of Dr. M.S. Reddy’s Multiple Mixed Strain Probiotic Therapy is the best way to cure the deadly hospital acquired infections affecting millions of people around the world, with high degree of mortality. This has been attested by several practicing medical professionals and scientists around the world (Reddy and Reddy, 2017).

**KEYWORDS:** Immunomodulation; Multiple Mixed Strain Probiotic Therapy; Bacteriocins; Immunomodulins; Cytokines; Gut-brain axis; Neurotransmitters; Regulatory T-cells; CD4+ TH cells; CD8+ cytotoxic cells; Hygiene hypothesis; Probiotic therapy; Para Probiotics; Fecal Microbiota Therapy (FMT); Hospital acquired infections; *C. diff* (*Clostridium difficile*); MRSA (Methicillin Resistant Staphylococcus Aureus); Nosocomial infections; Probiotics; Immune tolerance; Immune stimulation; Autoimmune diseases.

**Introduction**

To eliminate the confusion, it is important to first define and clarify the following terminology, since these terms are used extensively and interchangeably in this article, although they are basic: Probiotics, Immunomodulation, Multiple Mixed Strain Probiotics, Interleukins, Cytokines, Interferons, and Immunoglobulins.

**Probiotics** are defined as follows, as per The United Nations Food and Agriculture Organizations and World Health Organization: “Probiotics are any live microorganisms which when administered in adequate amounts confer a health benefit on host”. Earlier, the genesis and specific health benefits of Probiotics have been investigated, verified, and published (Reddy and Reddy, 2000; 2009; 2011; 2015; 2016 and 2017).