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Singapore: Regenerative medicine company Mesoblast has received positive results in a large animal model of rheumatoid arthritis (RA) following a single intravenous injection of its proprietary allogeneic, or "off-the-shelf", immunomodulatory adult Mesenchymal Precursor Cells (MPCs).

Mesoblast Chief Executive Professor Silviu Itescu said that the results indicated that the company's immunomodulatory MPCs may have a mechanism of action that is unique from other biological therapies by shutting down multiple cytokine pathways simultaneously, and that this could become a first line treatment with a superior and sustained benefit on reducing inflammation and destruction of joints in people suffering from severe RA.

RA is an autoimmune disease driven and perpetuated by pro-inflammatory cytokines such as TNF-alpha, IL-6, and IL-17. Treatments targeting any of these pathways alone are only moderately effective in RA, need to be administered chronically, and may cause unacceptable infectious adverse events. A single intravenous injection of allogeneic MPCs in sheep with collagen-induced arthritis concomitantly affected T cells, monocytes/macrophages, and synoviocytes to simultaneously shut down TNF-alpha, IL-6, and IL-17 cytokine pathways, and improve joint pathology.

Severe joint synovial inflammation with cartilage loss and bony erosions, characteristic of human RA, occurs in sheep injected with collagen. In a pilot study, significant numbers of allogeneic MPCs were detected in involved joints or lymph nodes of arthritic sheep at 24 hours after a single intravenous injection, but not in normal sheep, indicating that MPCs selectively migrate to sites of immune-mediated inflammation.

Rheumatoid arthritis is a chronic systemic disease characterized by progressive joint deformity and joint destruction driven by synovial inflammation and hyperplasia in which cytokines play central pathogenic roles. The prevalence of RA is estimated to be 0.8 percent worldwide, with women twice as likely to develop the disease as men. Mesoblast is a world leader in commercializing biologic products for the broad field of regenerative medicine.