Researchers at the University of South Florida have developed a novel method for the purification of immunosuppressant protein (HISP). HISP can be used to treat inflammation.

In light of the therapeutic potential of human NT2N neurons (hNT) neuronal grafts, our researchers evaluated hNT for its MHC and immunological characteristics, and for evidence of neuronal regulation of immune cells in vitro. During this evaluation, our inventors have discovered a novel hNT neuron-expressed immunosuppressive protein (HISP) with characteristics unlike gangliosides or TGF-β, which is potently suppressive of T-cell activation, proliferation, and the production of IL-2. Consequently, hNT neuronal grafts may prove to be both therapeutic and self-protective, engrafted alone, or as co-grafts with other neurons. HISP can maintain T cells in a quiescent G0/G1 state without lowering their viability. It can suppress proliferation of responder peripheral blood mononuclear cells in allogeneic mixed lymphocyte cultures; It has been shown that HISP can also suppress T-cell proliferation and IL-2 production in response to phorbol 12-myristate 13-acetate (PMA), ionomycin and concanavalin-A.

This novel T-lymphocyte suppressive hNT protein has broad applications in preventing graft rejection in transplantation settings, in the treatment of autoimmune diseases, and in the suppression of severe allergic responses. Further, its neuronal origin introduces the likelihood that it may represent a novel class of immunomodulators, which are responsible for the maintenance of CNS immune privilege.

The invention is related to the field of drug therapy, and in specific, the invention encompasses a protein for immunosuppression. Hence, this technology is directly applicable to the field of medicine.

**ADVANTAGES:**
- Suppression of T-cell proliferation and IL-2 production
- Broad applications in prevention of graft rejection
- Suppression of various allergic responses

The mean±SD levels of IL-2 expressed by PHA-stimulated PBMC were significantly less when cultured in the presence of hNT supernatant (▪) compared to controls,(●) 48 hours after mitogen stimulation (p<0.01).