



Synthetic Protein For Inducing Immune Tolerance

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WARF: P200100US02

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The Invention

The present invention from UW Madison researchers is a fusion protein made of the full length PDL-1 transmembrane protein and full length IDO cytosolic protein which the inventors termed PIDO. These two proteins are known to affect immune response. PDL-1 presents itself on the surface of cells to suppress T cell recognition of cells. IDO is expressed inside cells where it metabolizes an amino acid into a compound secreted to locally suppress T cell recognition of cells. The inventors fused mouse PDL-1 and human IDO using a linker peptide, expressed the fusion protein in a variety of cell types including human cultured cells and islet cells isolated from juvenile pig pancreas. The inventors found that the protein was expressed as hypothesized, PDL-1 anchored the protein in the membrane of the cells, presenting most of the PDL-1 on the surface of the cells and IDO was localized intracellularly close to the membrane. The inventors transplanted the pig islet cells into a diabetes mouse model where the islet cells in the mice had been destroyed. They measured the survival of the pig islet cells in the mice and production of pig insulin. Islet cells that were not transfected with the fusion protein did not survive transplantation. Cells expressing the protein survived and produced measurable insulin through 12 weeks. Unfortunately, mice do not respond to pig insulin, so the experiment couldn't be prolonged due to the diabetic conditions of the mice.

Tech Fields

- [Therapeutics & Vaccines : Autoimmune disorders](#)

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