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Endogenous stem cells as a treatment for celiac disease, a case report

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A 59-year old male presented with abdominal discomfort, diarrhea, headaches, fatigue, and bone and joint pain of long standing duration. Underlying complications included Hashimoto's thyroiditis, Sjögren's disease, autoimmune induced insulin-dependent diabetes, and systemic lupus erythematosus. A sheep red blood cell agglutination test was utilized to detect a numerical value for antibodies to serum-containing antigens. A value of >1.0 designates sufficient circulating immunoglobulins to an antigen to cause an allergic response to that antigen. Based on a value of 73 to the gluten antigen, gliadin, a diagnosis of Celiac disease was made. Between 2011 and the present the patient was placed on a gluten-free diet and treated with 8 endogenous totipotent stem cell-pluripotent stem cell transplants, i.e., one autologous, one autologous/allogeneic, three chimeric/allogeneic, and three chimeric. The stem cell transplants entailed daily ingestion of a nutraceutical to stimulate endogenous stem cell proliferation in situ and ingestion of a second nutraceutical prior to harvest to maximize endogenous stem cell capture. The endogenous stem cells were then harvested and segregated by size and unique cell surface markers into individual populations of totipotent stem cells and pluripotent stem cells. The endogenous stem cells were activated and infused systemically into directed sites. Following the 8th stem cell treatment an agglutination test for the gluten antigen gliadin was performed and demonstrated a numerical value of 0.01. As shown, endogenous totipotent stem cell-pluripotent stem cell transplants can modulate the immune system, reversing allergic symptoms in persons with an allergy to gluten.

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Composite pancreatic organoids for the treatment of insulin-dependent diabetes

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Hypothesis: Decellularized pancreatic matrices seeded with endogenous stem cells and donor islets comprise an organoid that demonstrates enhanced insulin secretion in response to a glucose challenge. The adult animals were euthanized following the guidelines of Fort Valley State University-IACUC and Mercer University-IACUC. Adult porcine pancreases were decellularized using a mixture of detergents. Adult rat pancreatic islets were obtained by lipase digestion followed by Ficoll gradient separation. Control cultures consisted of decellularized matrices, naïve endogenous stem cells, and rat islets, all cultured individually. Experimental groups consisted of islets co-cultured with clonal populations of pluripotent and totipotent stem cells seeded on decellularized pancreatic matrices. Control and experimental cultures were challenged with the insulin secretagogue glucose. The control and culture media were removed and stored at -20oC until assayed using a RIA specific for rat insulin. The culture media, containing bovine insulin, were assayed using a RIA specific for rat insulin. No detectable levels of insulin (bovine, rat, human, or porcine) were noted in controls of the media only, the stem cell populations or the decellularized matrices, respectively. Native pancreatic islets secreted nanogram quantities of rat insulin per nanogram of DNA. Composite pancreatic rat organoids demonstrated increased rat insulin secretion in the range of milligram quantities of insulin per nanogram of DNA, i.e., a 250-fold increase in insulin secretion compared to pancreatic islets alone. These studies suggest that composites of native islets, decellularized pancreatic matrices and endogenous pluripotent and totipotent stem cells could provide enhanced secretory tissue for pancreatic islet transplants than donor islets alone.

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