HUMAN STEM CELLS DERIVED FROM CORD BLOOD REDUCES THE SIZE OF PANCREATIC TUMOR IN SCID MICE.

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Introduction:

Pancreatic cancer has markedly increased incidence over the past several decades, and ranks as the fourth leading cause of cancer death in the United States. Despite the high mortality rate associated with pancreatic cancer, its etiology is poorly understood. This discrepancy reflects the current lack of effective treatment available for the pancreatic cancer patient and highlights the urgent need for novel therapeutic approaches in this area. Celprogen's Stem Cell based therapy for pancreatic cancer utilizes Celprogen's core technology to expand and differentiate progenitor Stem cells derived from Human Cord blood into endocrine and exocrine pancreatic tissue. Here, we demonstrate pancreatic tumor regression with a 75% reduction in tumor size with Human cord blood derived stem cells being injected intravenously to SCID mice model that had Human pancreatic tumor implanted intra-peritoneal. The injection of cord blood derived stem cells reduced the tumor size significantly by 75% after three conservative injections within two weeks time interval.

Method:

Four groups of five SCID mice were selected in this study. Group A of five SCID mice did not have human pancreatic tumor implant and did not receive stem cell therapy. Group B of five SCID mice did not have human pancreatic tumor implant and received stem cell therapy. Group C of five SCID mice had 0.5 g of solid human pancreatic cancer implanted intra-peritoneal and did not received stem cell therapy. Finally Group D of five SCID mice had 0.5 g of solid human pancreatic cancer implanted intra-peritoneal and received stem cell therapy intravenously three conservative injections within two weeks time interval. At the end of two weeks the tumor sizes were measured.

Results:

Initially when the Human Pancreatic Tumors were established, the mice became diabetic and the insulin levels were similar to type 1 diabetic model after a week of tumor implant. The table 1 below indicates the results of tumor regression with stem cell therapy for pancreatic cancer.

Table 1: The table indicates Human Pancreatic tumor regression with and without stem cell therapy, the percent reduction of Pancreatic Tumor size.

Group	SCID mouse Category	Stem Cell Therapy	% Tumor size reduction Compared to baseline
A	Mouse without pancreatic tumor implant (5)	No	(No tumor)
B	Mouse without pancreatic tumor implant (5)	Yes	(No tumor)
C	Mouse with pancreatic tumor implant (5)	No	0 %
D	Mouse with pancreatic tumor implant (5)	yes	75 %

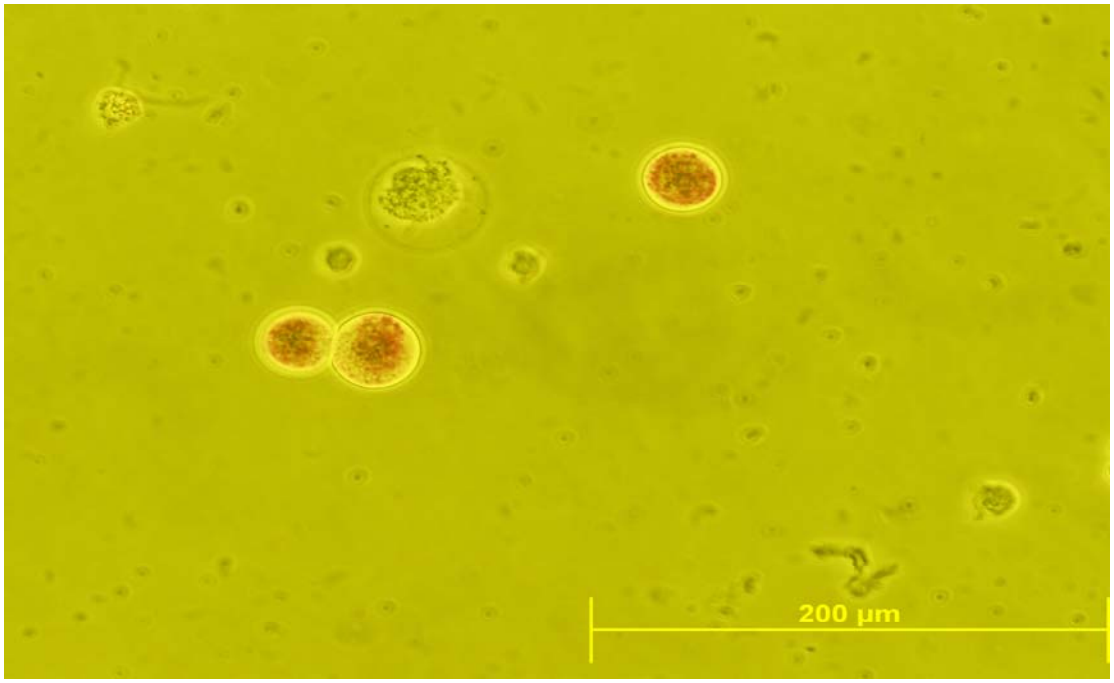


Figure 1: Human Cord Blood Derived Stem cells 14 days in culture. The stem cells were stained with Crimson Belle, for selection of viable stem cells that were further stained with immunological probes for selection of CD 34 positive cells. The viable stem cells were expanded in Celprogen's stem cell expansion growth media. The red stained stem cells are viable cells as indicated by the Crimson Belle viable nuclear stain.

Figure 2: Human Cord blood Derived Stem cells 28 days in culture. These stem cells were expanded in Celprogen's Expansion Media prior to injection into the SCID mice Stained with GFP.

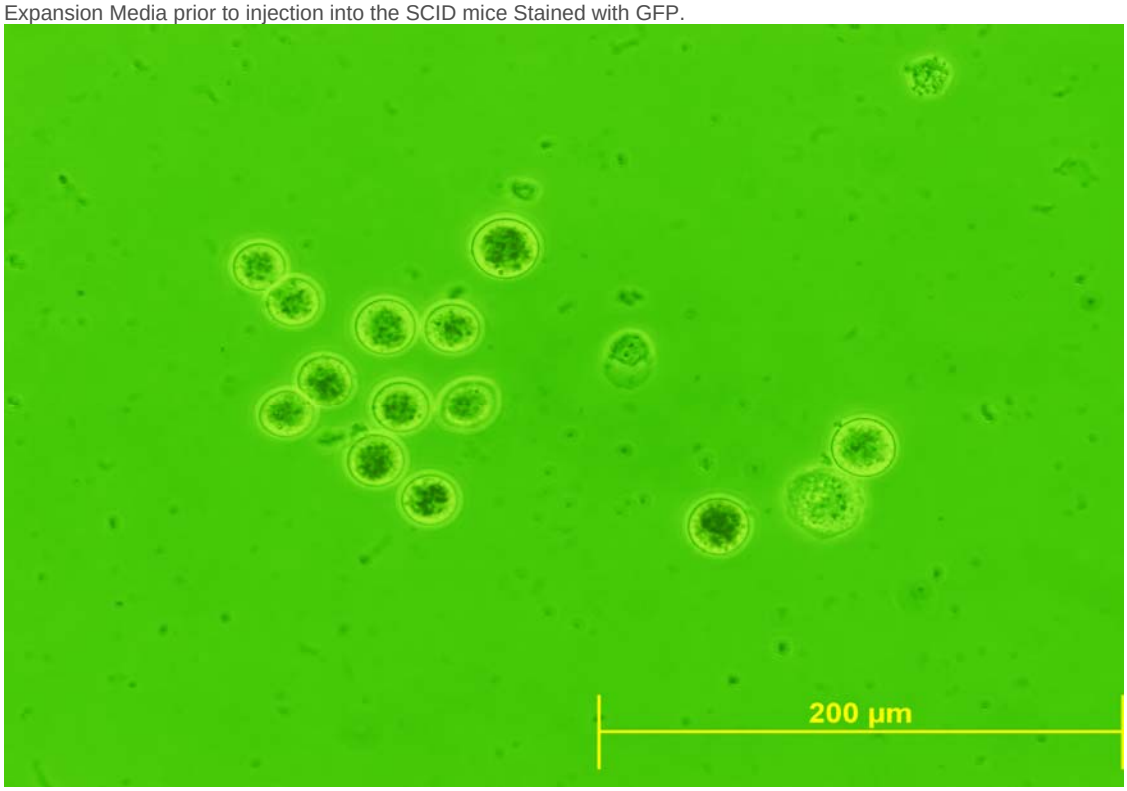


Figure 3: Human Pancreatic Tumor, Hematoxylin & Eosin (H & E) stained, tumor that was implanted in the SCID mice.

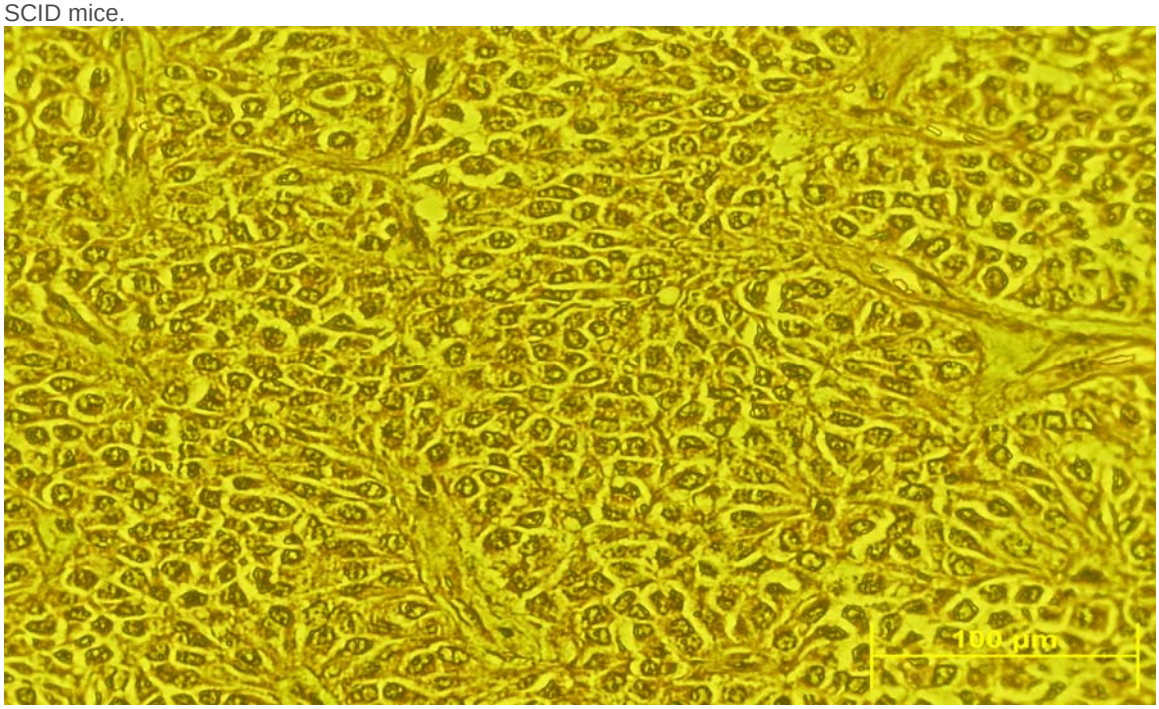


Figure 4: Human Pancreatic tumor, stained with GFP, was implanted in SCID mice.

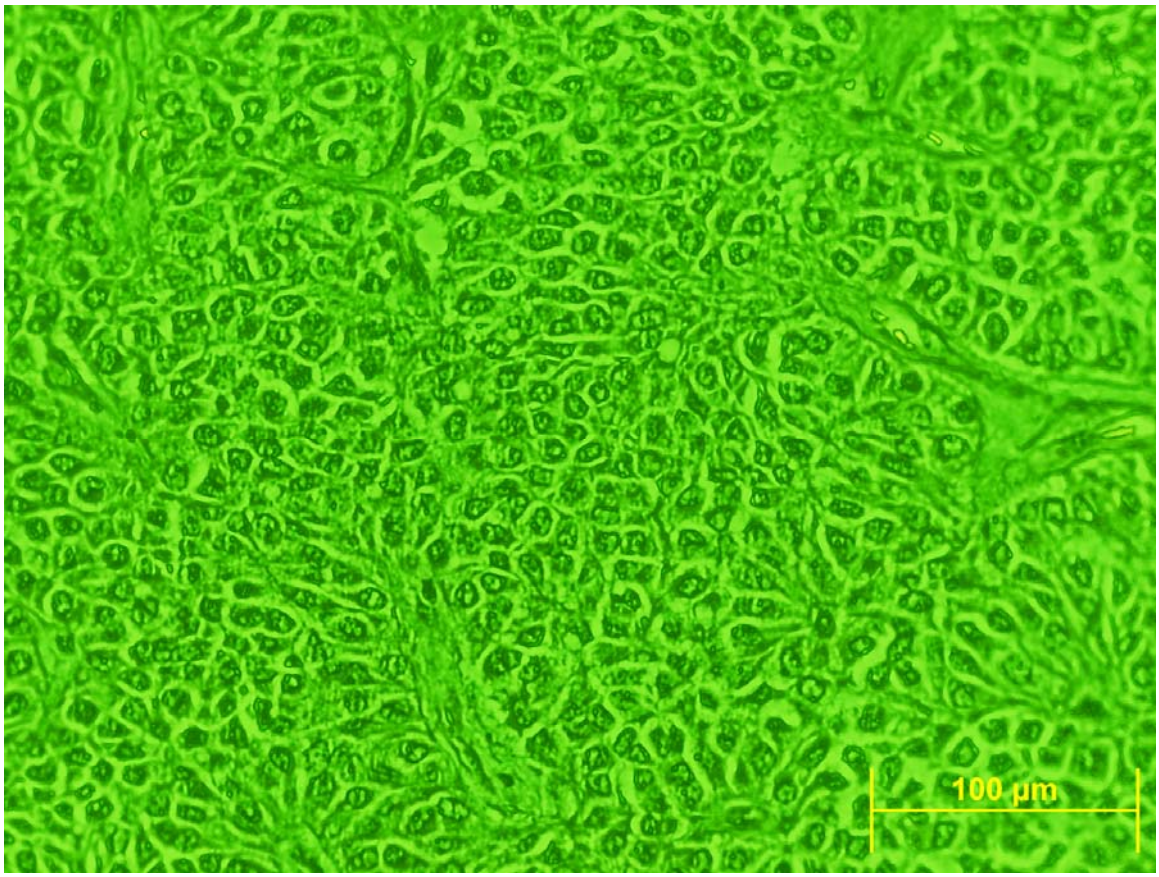


Figure 5: Normal Human Pancreas tissue, stained with Hematoxylin & Eosin (H & E).

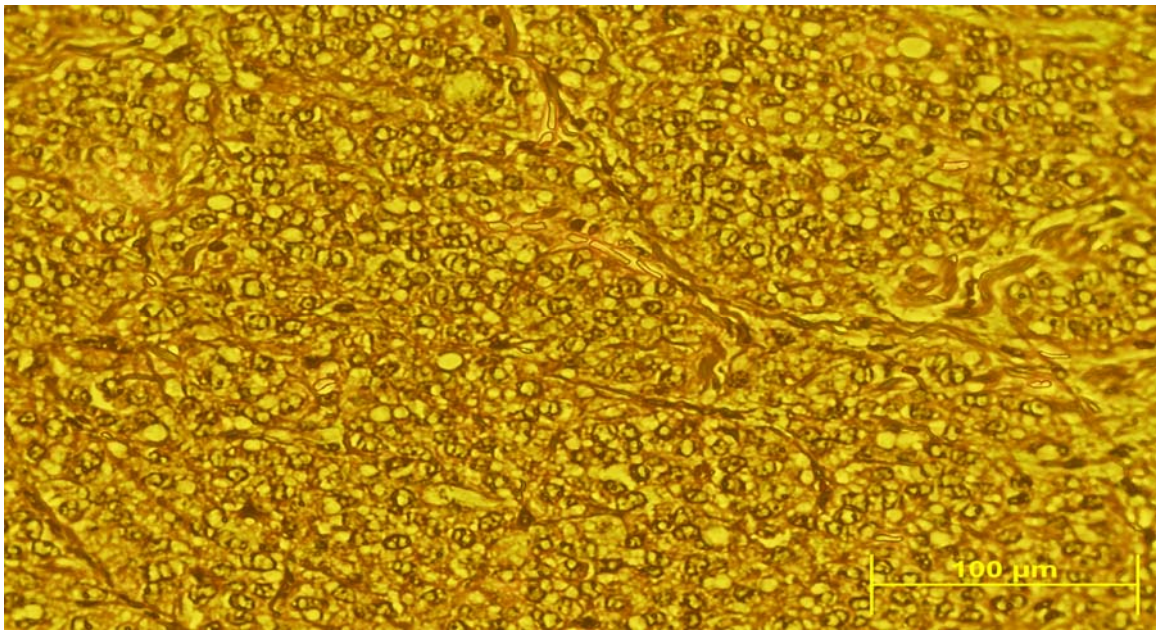
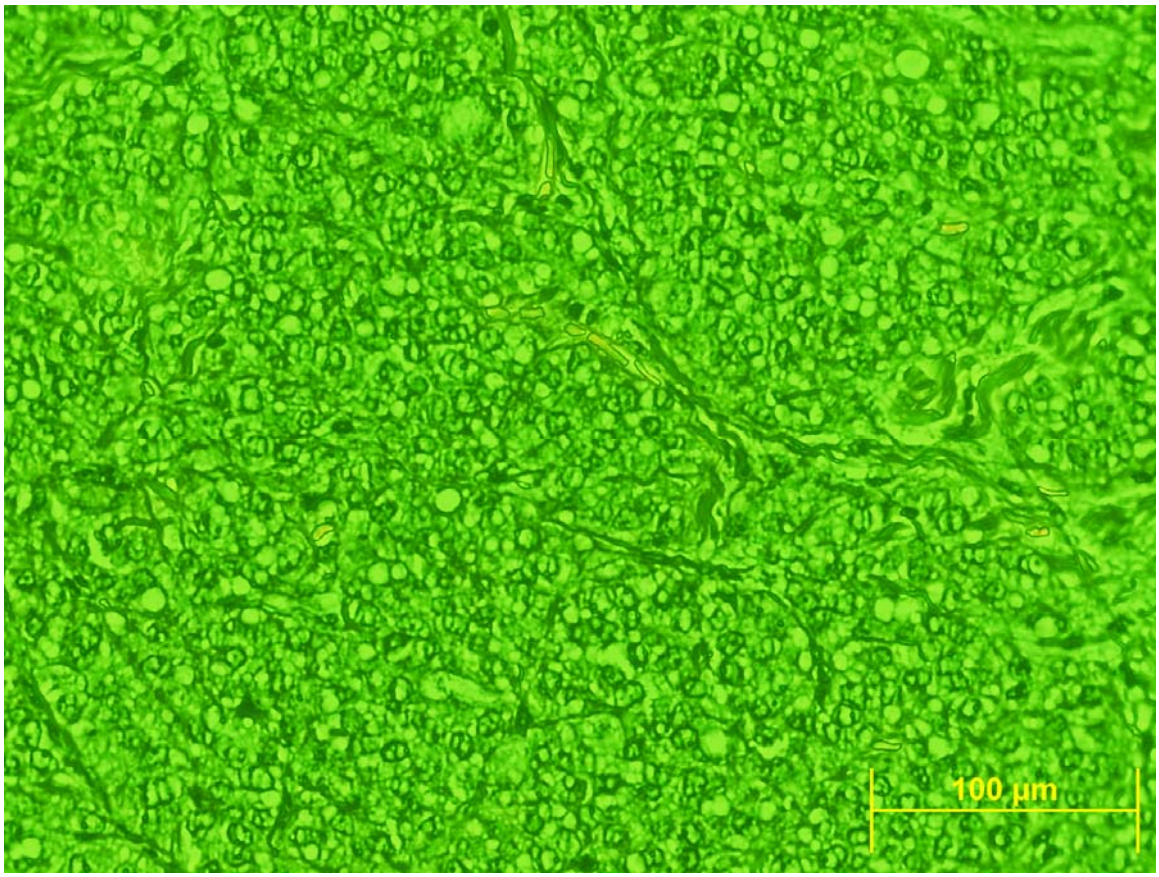


Figure 6: Normal Pancreas tissue stained with GFP.



CONCLUSIONS:

The results from the present study indicates that human cord blood derived stem cells can play an active role in tumor regression in particular reducing the pancreatic tumor size and restoring the pancreas endocrine and exocrine function. Further studies need to be preformed in evaluating the molecular mechanisms of how the stem cells are capable of restoring the pancreatic function, and validating this study with other pancreatic cancer models.

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