

## Experimental study of combined treatment with tacrolimus and donor splenocytes via the portal vein in small bowel transplantation

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**Abstract :** We previously reported that the combined treatment of perioperative administration of donor splenocytes via the recipient's portal vein (DSPV) and a short-course Tacrolimus significantly prolonged the survival of fully allogenic grafts in rat small bowel transplantation (SBTX). In the present study we examined whether this effect depended on the quantity of the administered alloantigens in DSPV. In addition, we examined the expression of the surface antigen on T cells of the splenocytes and the induced toleragenic factor, according to the tolerant recipients which in our previous report had shown the prolongation of allogenic transplant small bowel graft survival by the combined treatment of DSPV ( $1 \times 10^6$  donor splenocytes) and a short-course Tacrolimus. Donor splenocytes were prepared from Brown-Norway (BN (RT1<sup>u</sup>)) rat spleens for Lewis (LEW (RT1<sup>y</sup>)) recipients. The recipients ( $n=10$ ), treated with a short course of Tacrolimus (0.5mg/kg, 0 to 3 days postoperatively) only showed graft rejection with an average of  $6.3 \pm 1.0$  days postoperatively. However, the combined treatment, consisting of DSPV of  $1 \times 10^6$  donor splenocytes and a short course Tacrolimus significantly prolonged graft survival to  $12.7 \pm 2.1$  days ( $n=12$ ,  $P<0.01$ ). DSPV of less than  $1 \times 10^6$  donor splenocytes ( $5 \times 10^5$  cells and  $2.5 \times 10^5$ ) could not prolong the graft or animal survival under a short-course Tacrolimus treatment. In the tolerant recipients, the CD4 and CD8 percentages of splenocytes were not significantly different from those of control rats or recipients that were treated with short-course Tacrolimus alone. Nevertheless, the percentage of Tcr- $\alpha$   $\beta$ <sup>+</sup> cells expressing IL-2 receptor (R) was significantly lower than in either control rats or the recipients with short-course Tacrolimus. In the suppression assay to one-way mixed lymphocyte response, a toleragenic factor was suggested to the present in the serum of the tolerant recipients. In the present study, it was suggested that the effects of the combined treatment of DSPV and short-course Tacrolimus for the prolongation of graft survival in the rat allogenic SBTX should depended on the quantity of the antigens administered into the portal vein. The beneficial effects of this treatment were reflected in the suppression of IL-2R on the recipient's splenocytes, and tolerogenic factor(s) might subsequently be induced in the tolerant recipient's serum. *J. Med. Invest.* 48 : 157-165, 2001

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## INTRODUCTION

Since the gut is the largest lymphoid tissue in the human body and has specific immunogenicity (1), graft rejection is the most important threat to suc-

# Small Bowel Transplantation An Experimental Study In The Rat

**Öyvind Östraat**



## **Small Bowel Transplantation An Experimental Study In The Rat:**

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organ systems covered include the heart and or lung liver small bowel kidneys and bone marrow The species selected for representation of each experimental model is based upon the usefulness and frequency of the model for studies in transplantation research This book is important for all experimental surgeons transplantation biologists and students of surgical research     **Research Awards Index** ,1983     **Gastroenterology Abstracts and Citations** ,1977     *Tissue Engineering Using Ceramics and Polymers* Aldo R. Boccaccini,J Gough,2007-10-31 Technology and research in the field of tissue engineering has drastically increased within the last few years to the extent that almost every tissue and organ of the human body could potentially be regenerated With its distinguished editors and international team of contributors Tissue Engineering using Ceramics and Polymers reviews the latest research and advances in this thriving area and how they can be used to develop treatments for disease states Part one discusses general issues such as ceramic and polymeric biomaterials scaffolds transplantation of engineered cells surface modification and drug delivery Later chapters review characterisation using x ray photoelectron spectroscopy and secondary ion mass spectrometry as well as environmental scanning electron microscopy and Raman micro spectroscopy Chapters in part two analyse bone regeneration and specific types of tissue engineering and repair such as cardiac intervertebral disc skin kidney and bladder tissue The book concludes with the coverage of themes such as nerve bioengineering and the micromechanics of hydroxyapatite based biomaterials and tissue scaffolds Tissue Engineering using Ceramics and Polymers is an innovative reference for professionals and academics involved in the field of tissue engineering An innovative and up to date reference for professionals and academics Environmental scanning electron microscopy is discussed Analyses bone regeneration and specific types of tissue engineering     **Research Grants Index** National Institutes of Health (U.S.). Division of Research Grants,1970     **AMB** ,1997     **Hepato-gastroenterology** ,2004     **Man of Microsurgery** Sun Lee,1985-08-22     *Journal of Comparative Neurology* ,1924 Publishes papers on the anatomy and physiology of the nervous system Preference is given to papers which deal descriptively or experimentally with the nervous system its structure growth and function     **Excerpta Medica** ,1991     *Pediatric Surgery* Kenneth J. Welch,1986     **Experimental Modulation and Suppression of Anti-allograft Immune Response** Öyvind Östraat,1997     *Biological Systems* Barbara Jasny,Daniel Koshland,1990     *Gastroenterology Abstracts and Citations* ,1977     *Scandinavian Journal of Gastroenterology* ,1996-07

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