# Update in Transplantation Immunology : The Role of New Immunosuppressive Agents

Jin-seok Jeon

Department of Internal Medicien, Soonchunhyang University College of Medicine

Kidney transplantation is now strongly established as the therapeutic choice for end stage renal disease. Recently, many immunosuppressive agents were developed. One of them is a powerful antilymphocyte antibody, Alemtuzumab (Campath-1H). Its use in organ transplantation result in a low incidence of rejection. More than 30 cytokines use the JAK-STAT pathways, making it an attractive target for therapeutic interventions. The development of a new JAK3 inhibitor named CP-690 550 was recently reported. In non-human primate, treatment with CP-690 550 resulted in significant improvement of allo-graft survival.

The adverse effects of currently used immunosuppressive drugs such as cyclosporine and FK506 result in nephrotoxicity. As an immune-specific alternative to these conventional immunosuppressants, new biotechnology tools can be used to block the costimulation signals of T-cell activation. Belatacept(Lea29Y), a modified CTLAIg, bound CD80 two fold better than CTLA4Ig. The phase II trial of belatacept explored a novel approach in the delivery of immnosuppression therapy with a regimen designed for chronic biologic administration. Induced costimulatory molecule (ICOS) share 20% homology with CD28. ICOS signaling is required for the activation of effector T cells. The key role of ICOS has been demonstrated by the significant prolongation of allograft survival with an anti-ICOS blocking mAb.

FTY720, a spingosine 1-phosphate (SIP) analogue, promote the survival of human and animal allografts by sequestering T cell within peripheral lymphoid tissue. FYT 720 failed to show an improvement in efficacy for the prevention of renal allograft rejection in two large phase III studies. FTY treatment regimens were associated with impaired renal function and the development of macula edema. Currently, the further development in renal transplantation was stopped.