

Sel T Regulator Tipe Donor Diperlukan untuk Mencegah Kegagalan Transplantasi Sumsum Tulang Sistem Alogenik pada Model C57BL/6 → BALB/c

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ABSTRAK

Pada transplantasi organ maupun sumsum tulang, terjadinya penolakan donor oleh resipien dan juga GVHD (*graft versus host disease*) menjadi masalah paling penting pada bidang kesehatan. Lebih lanjut telah diketahui bahwa toleransi resipien atas donor tidak bisa berlangsung lama tanpa intervensi dari luar. Untuk mengetahui peranan sel T regulator pada transplantasi alogenik, pada penelitian ini dilakukan infusi sel T $CD4^+CD25^+$ yang berasal dari tipe donor. Sebelum transplantasi dilakukan resipien diradiasi dengan dosis letal 850 rad. Pada penelitian ini ditunjukkan bahwa infusi sel T regulator $CD4^+CD25^+$ yang berasal dari mencit C57BL/6 pada model transplantasi C57BL/6→BALB/c terbukti membantu toleransi resipien terhadap donor. Sebaliknya sel T konvensional $CD4^+CD25^-$ tidak dapat membantu keberhasilan transplantasi pada pengamatan tiga bulan pasca transplantasi. Penolakan donor oleh resipien maupun GVHD disebabkan oleh aktivasi sel T dan kurangnya sel T regulator $CD4^+CD25^+$. Hasil ini membuktikan bahwa sel T regulator $CD4^+CD25^+$ berperan penting menjaga homeostasis dan menjaga agar jumlah dan fungsi limfosit T dalam keadaan normal. Lebih lanjut pada penelitian ini ditunjukkan bahwa sel T donor $CD4^+CD25^+$ membawa molekul Foxp3 dengan level yang tinggi.

Kata kunci: Sel T regulator, transplantasi, alogenik, Foxp3⁺.

ABSTRACT

In solid organ and bone marrow transplantation, rejection of donor tissue by recipient and graft versus host disease (GVHD) reactions are the most important issues in the health field. Furthermore it is known that the tolerance between donor and recipient can not be maintained for long term without manipulation. To determine the role of regulatory T cells, in this experiment we conducted infusion of donor type $CD4^+CD25^+$ T cells. Before transplantation was performed, recipients were irradiated with lethal doses of 850 rad. In this study we demonstrated that the infusion of donor type $CD4^+CD25^+$ regulatory T cells in transplantation model of C57BL/6 → BALB/c promoted the tolerance of recipient against donor. In contrast, conventional T cells $CD4^+CD25^-$ can not help the success of transplantation at three months post-transplantation. Rejection of donor tissue by the recipient and GVHD reaction are caused by the activation of T cells and lack of regulatory T cells, $CD4^+CD25^+$. These results suggest that $CD4^+CD25^+$ regulatory T cells play an important role to homeostasis maintaining and keeping the number and function of lymphocyte T cells in normal circumstances. Furthermore, this study demonstrated that donor $CD4^+CD25^+$ regulatory T cells express high levels of Foxp3 molecules.

Key word: regulatory T cells, transplantation, allogeneic, Foxp3⁺

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