

## db/db 마우스와 db/m 마우스간에서 시행한 상호 부고환 지방 이식술이 알부민뇨에 미치는 영향

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### Effect of mutual Epididymal Fat Transplantation between db/db Mice and db/m Mice on Urinary Albumin Excretion Level

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**Introduction and Aims :** The adipose tissue is now accepted as a major regulatory organ that plays a key role in type 2 diabetes, which has become the single most important etiology of end-stage renal disease. Therefore, in this study, we performed the mutual transplantation of epididymal fat from diabetic db/db mice and non-diabetic db/m mice into non-diabetic db/m mice and diabetic db/db mice, respectively and investigated the effects on changes in parameters associated with insulin resistance and diabetic conditions compared with non-transplanted db/m and db/db control mice, respectively.

**Methods :** Epididymal fat pads were removed from db/db mice and db/m mice and transplanted at the same amount of 200 mg subcutaneously in the skin of the back of db/m mice and db/db mice, respectively. At 3 months after transplantation, the mice were sacrificed and specimens were obtained and prepared for analysis in comparison with non-transplanted db/m and db/db control mice, respectively.

**Results :** At 3 months after transplantation, although there were no significant differences in fasting blood glucose, HbA1c, adipokine levels, creatinine clearance, and blood pressure, db/db mouse epididymal fat-transplanted db/m mice showed significantly increased urinary albumin excretion ( $25.54 \pm 8.86 \mu\text{g/day}$  vs.  $3.21 \pm 0.99 \mu\text{g/day}$ ,  $p=0.014$ ) along with the trend towards aggravation of insulin resistance assessed by fasting plasma insulin and homeostasis model assessment of insulin resistance (HOMA-IR) as well as more weight gain compared with non-transplanted db/m mice. In case of db/m mouse epididymal fat-transplanted db/db mice, we also found no differences in adipokine level, creatinine clearance, and blood pressure. However, there was a definite trend towards decreased urinary albumin excretion ( $206.09 \pm 83.37 \mu\text{g/day}$  vs.  $697.99 \pm 139.12 \mu\text{g/day}$ ,  $p=0.066$ ) along with significant improvement of insulin resistance represented by insulin tolerance test, fasting blood sugar, blood cholesterol, and HbA1c levels compared with non-transplanted db/db mice.

**Conclusion :** Collectively, this study suggests that adipose tissue plays a central role in albumin excretion level possibly by modulating insulin resistance status.

**Key Words :** 지방이식, 알부민뇨, 인슐린 저항성

Fat transplantation, Albuminuria, Insulin resistance