MOLECULES INVOLVED IN THYMIC EPITHELIAL SENESCENCE – IN VITRO AND IN VIVO RESULTS

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Introduction: The thymus undergoes rapid involution compared to other organs. The thymic epithelium shrinks and gives place to adipose tissue. This is followed by functional decline in naive T-cell production and subsequently increased incidence of infections, cancers and autoimmune diseases. It is of high importance to identify molecules responsible for thymic adipose involution or central immune senescence to prolong imune fitness.
Methods: For our experiments we have useda mode cell line (primary derived mouse thymic epithelial cell line or TEP1), enriched mouse thymic epithelial cells from control and also knock-out mice for PPARgamma and LAP2alpha. The applied methods include qRT-PCR for gene expression, immune-fluorescent staining for histology and mTREC qPCR to assess naive T-cell production.
Results – conclusion: Our data indicate that with ageing the thymic epithelium undergoes indirect trans-differentiation towards adipocyte lineage. First there is an initial EMT (epithelial-to-mesenchymal) transition stage into fibroblast-like cells that subsequently differentiate towards adipocyte lineage. The process may be promoted by LAP2alpha or PPARgamma, and may be slowed down by Wnt4 based on in vitro data. However, in vivo data show a more complex constellation therefore further studies are required.