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Molecular Interaction of IL-10 and IL-25 in Lupus Nephritis

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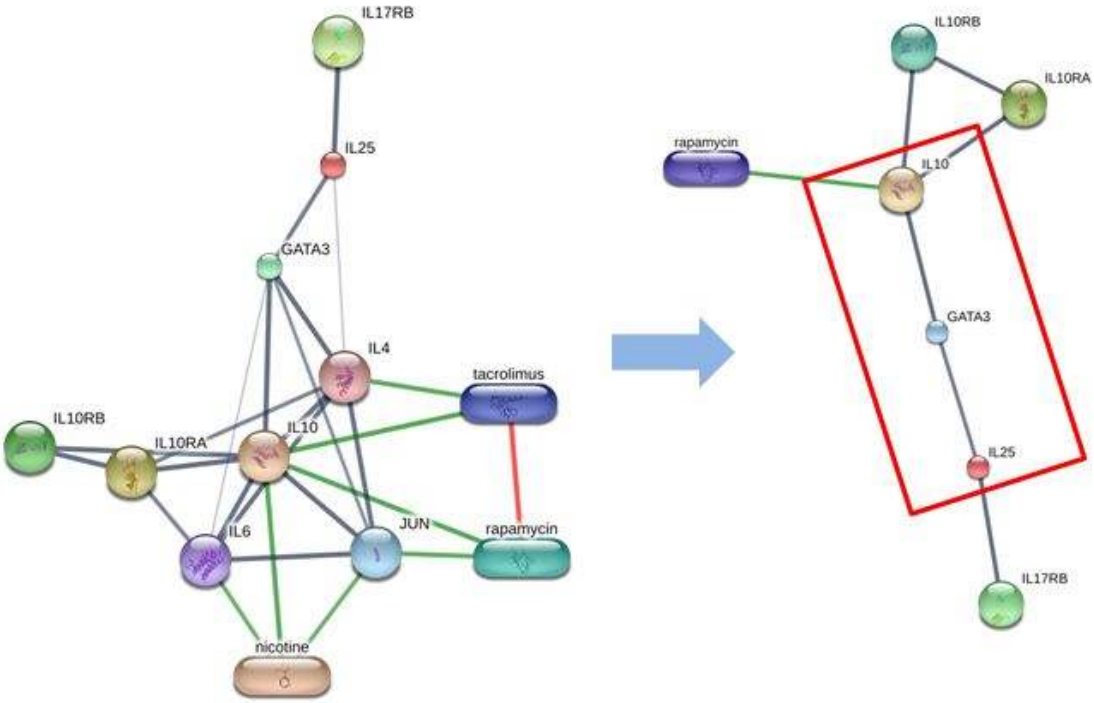
Objectives: Systemic lupus erythematosus (SLE) is a chronic and systemic autoimmune disorder associated with lupus nephritis marked by overexpression of some cytokines. Recently, IL-10 has been reported to be associated with lupus nephritis and can be used as a biomarker of this disease. Previous study reported elevated IL-25 expression was correlated with the severity of SLE with lupus nephritis. Therefore, these both IL-10 and IL-25 are thought to be involved in the pathogenesis of SLE with lupus nephritis. However, there is no report related to their interaction in driving lupus nephritis. We hypothesized that IL-10 and IL-25 are interacted each other in lupus nephritis. The aim of this study was to predict molecular interaction between IL-10 and IL-25 in lupus nephritis by using STITCH analysis.

Methods: STITCH v.5.0, online bioinformatics software, was employed for this prediction of molecular interaction. We set "IL10" and "IL25" as keywords used for bioinformatics analysis. In the part of organism type, *Homo sapiens* was selected to predict protein-protein interactions in human and followed by selecting the variant of molecules based on keywords used. After completing all steps, STITCH generated prediction of molecular interaction between IL-10 and IL-25.

Results: Based on the STITCH analysis, IL-10 and IL-25 were connected with some molecules such as IL-4 and GATA Binding Protein 3 (GATA3). After reducing the number of interactors, IL-10 and IL-25 were directly associated with GATA3. Interaction score of IL-10 – GATA3 and IL-25 – GATA3 was 0.989 and 0.885, respectively.

Conclusions: From this bioinformatics study, it can be conclude that IL-10 and IL-25 are associated with GATA3. However, some laboratory experiments are needed to prove this interaction and their role in lupus nephritis.

Figure 1. Molecular interaction between IL-10 and IL-25



Prediction of molecular interaction between IL-10 and IL-25 in SLE with lupus nephritis. "IL10" and "IL25" were used as keywords for bioinformatics analysis and 10 interactors were shown (Fig. A). After reducing the interactors, IL-10 and IL-25 clearly seemed to be interacted with GATA3 as shown by red box (Fig. B). This analysis was conducted on Monday, February 17, 2020 at 5.00 PM.