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Arsenic Trioxide attenuates MMP9/IL-17A expression in lupus nephritis – Results from Bioinformatics and In Vitro Studies

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INTRODUCTION

Previous studies suggested that treatment with low-dose arsenic trioxide (ATO) might reduce the risk of flares in patients with active systemic lupus erythematosus (SLE), but the underlying pharmacological mechanisms have not been investigated.

PURPOSE

To investigate the potential mechanism of ATO on human lupus nephritis using bioinformatics and in vitro study.

METHOD

The potential differentially expressed genes (DEGs) targets were identified using machine learning and network pharmacology analysis. The expression of characteristic genes and its association with immune cells was further examined and validated.

RESULTS

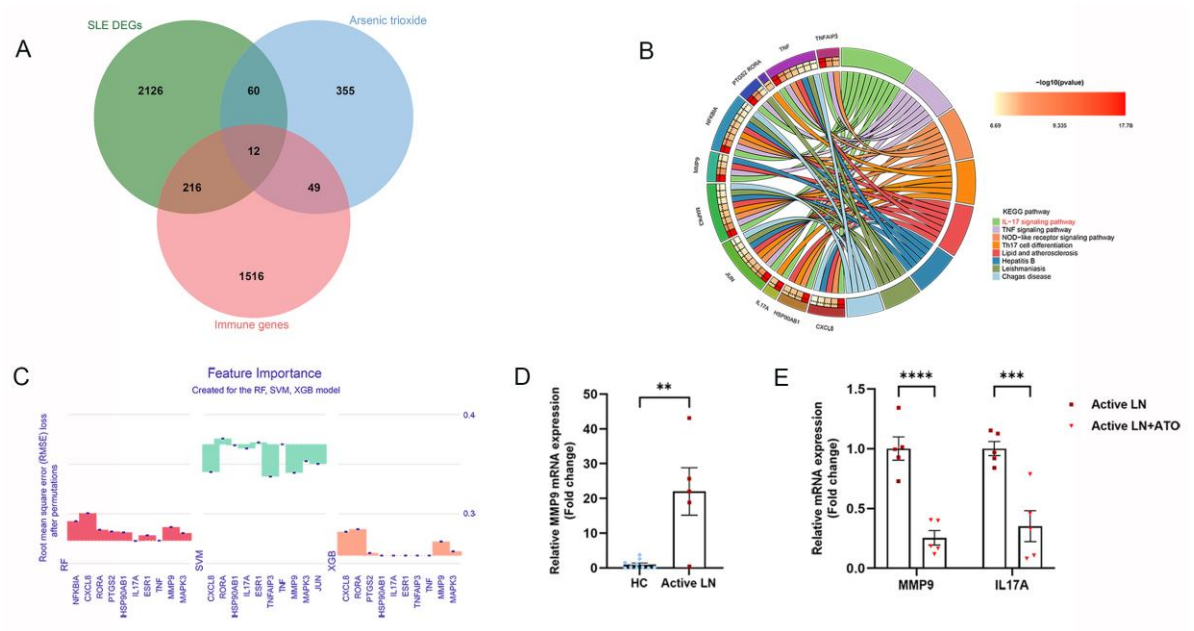

Figure 1. Intersection immune associated genes of arsenic trioxide (ATO) in systemic lupus erythematosus (SLE) and in-vitro study.
(A) Venn diagram showed 12 predicted targets of ATO in SLE. (B) KEGG pathway enrichment. (C) Important genes selected using three machine learning methods. (D) MMP9 mRNA downregulation in LN PBMCs treated with ATO (n=5). **p<0.01, ***p<0.001, ****p<0.0001.

CONCLUSIONS

ATO could attenuate MMP/IL-17A pathways in PBMCs in LN patients and hence may serve as a novel therapeutic option.

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