B-cell metabolism regulator IM156 contributes to the mitigation of systemic lupus erythematosus

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Background: Current treatment strategies for autoimmune diseases, including systemic lupus erythematosus, may not sufficiently control the aberrant metabolism in B-cells. To address this concern, we investigated a biguanide derivative, IM156, as a potential regulator for B-cell metabolism.

Methods: We evaluated the anti-inflammatory effects of IM156 *in vivo* in NZB/W F1 mice. NZB/W F1 mice in the experimental group were administered IM156 (2.5 mg/kg/day)-treated drinking water for 30 weeks, starting at 14 weeks of age. Proteinuria was measured weekly from spot urine and survival rate was also observed. Immunohistochemical staining for C3 deposits in collected kidneys was also examined.

Results: IM156 treatment significantly increased overall survival ($P<0.05$; $N=5-9$) and reduced proteinuria ($P<0.05$ or $P<0.01$; $N=5-9$) in lupus-prone NZB/W F1 mice. C3 deposits within the glomeruli were significantly decreased upon IM156 administration. Our data indicate that IM156 contributes to mitigation of lupus activity.

Conclusions: Therefore, IM156 may represent a therapeutic alternative for systemic lupus erythematosus mediated by B-cell hyperactivity.

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