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Myeloid-derived suppressor cells (MDSCs) are involved in anti-asthmatic effect of glucocorticoid in OVA-sensitized mice

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Myeloid-derived suppressor cells (MDSCs) are heterogeneous population of immunosuppressive myeloid progenitor cells. We have previously shown that MDSCs are increased and play protective role in OVA-sensitized mice lung. On the other hand, glucocorticoid is the most commonly used anti-inflammatory drug for asthma. The aim of this study is, therefore, to define the potential role of MDSCs in anti-asthmatic effect of glucocorticoid. Dexamethasone (DEX) enhanced differentiation from bone marrow cells into MDSCs under co-stimulation of IL-6/GM-CSF *in vitro*, which was inhibited by mifepristone, a glucocorticoid receptor antagonist. DEX-treated MDSCs showed potent inhibitory effect of T cell proliferation. Consistent with *in vitro* results, administration of DEX significantly increased a population of MDSCs, accompanied by resolution of inflammation in lung of OVA-sensitized mice. By contrast, inhibition of MDSCs attenuated the effect of DEX. Taken together, these data reveal a novel role of MDSCs in anti-inflammatory effect of glucocorticoid and further implicated pharmacological targeting of MDSCs as a potential therapeutic strategy in asthma.