

Induction of Autophagy by *Rosa acicularis* Leaves Extracts in RAW264.7 Cells

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Autophagy contributes to enhancing the immune system (innate and adaptive immune system) against foreign pathogens. Autophagy of macrophages is used as a major indicator for developing vaccine adjuvants to increase the adaptive immune response. In this study, RAL increased the production of immunostimulatory mediators and phagocytotic activity in RAW264.7 cells. RAL increased p62/SQSTM1 expression. Inhibition of TLR4, JNK, and PI3K/AKT blocked RAL-mediated increase of p62/SQSTM1. RAL activated JNK and PI3K/AKT signaling. RAL-mediated activation of JNK and PI3K/AKT signaling was reversed by TLR4 inhibition. Taken together, it is believed that RAL-mediated autophagy may be dependent on activating via TLR4-dependent activation of JNK and PI3K/AKT signaling in macrophages.

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