

The Proliferate and Migrate Effects of *Alpinia oxyphylla* Miq. fruits on RSC96 Schwann Cells

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Nerve regeneration is a complex physiological response that takes place after injury. Neurons can be separated into central and peripheral nervous systems, which have different anatomical structures and regeneration ability. Schwann cells play a crucial role in endogenous repair of peripheral nerves due to their ability to proliferate and migrate. *Alpinia oxyphylla* Miq. is an important traditional Chinese medicinal herb whose fruits are widely used as a tonic, aphrodisiac, anti-salivation, and anti-diarrhea. The aim of the present study was to investigate the molecular mechanisms by which *Alpinia oxyphylla* Miq. fruits (AOF) promote neuron regeneration. Here, we investigated the molecular signaling pathways, which include: (1) Survival signaling, IGFs-IGFIR-Akt-BCl₂ and proliferative signaling, mitogen-activated protein kinase (MAPK) pathways, (2) migrating signaling, uPA-MMPs. Our results show that treatment with extract of AOF induces the phosphorylation of the insulin-like growth factor-I (IGF-I)-mediated phosphatidylinositol 3-kinase/serine-threonine kinase (PI3K/Akt) pathway. Moreover, AOF induced phosphorylation of ERK1/2 and p38, activate the downstream signaling expression of PAs and MMPs. Taken together, our data suggests the MAPKs (ERK1/2, p38)-, PAs (uPA, tPA)-, MMP (MMP2, MMP9) and IGFs-IGFIR-Akt- BCl₂ signaling pathway of Schwann cells regulated by AOF might plays a major role in Schwann cell migration and proliferation.