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## Angelica Gigas Nakai (AGN) and Decursin from AGN down-regulates Myc to inhibit cell survival in **B-cell lymphoma**

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ngelica Gigas Nakai (AGN, Dang-gui) is Korean transitional medicine to treat dysmenorrhea, migraine and anemia. It has  $oldsymbol{\Lambda}$ also been shown that it induces cytotoxicity in lung cancer, breast cancer and leukemia cells. However, its anti-lymphoma effect has yet to be tested. Here, we demonstrate that AGN and Decurin target Myc, a proto-oncogene that is deregulated in most types of human tumors, including B-cell lymphoma, to suppress lymphomagenesis in vitro and in vivo. AGN inhibited cell viability in multiple B lymphoma cells while sparing normal splenocytes and bone marrow cells. Mechanistically, AGN's pro-apoptotic effect was through increment of cleaved PARP and caspase 3/7 activity in association with the repression of survival-promoting AKT/mTOR and MAPK pathways. We found that Myc, a prominent downstream target of these signals, plays a critical role in AGN-induced cell death. Moreover, co-treatment of AGN with a Myc inhibitor JQ1 (a BET bromodomain inhibitor) or 10058-F4 (Myc-Max dimerization inhibitor) synergistically enhanced cytotoxic activity against cancer cells with marked suppression of Myc. Anti-cancer effect of AGN was confirmed in Eµ-myc transgenic mice, administration of AGN prevented the development of High Grade Non-Hodgkin's Lymphoma (HG-NHL) and normalized B-cell development with concomitant down-modulation of Myc. The pro-apoptotic activities of AGN were recapitulated by Decursin, indicating that anti-tumor Effect of AGN was mainly caused by Decursin. These findings suggest that AGN and Decursin possess potent antilymphoma activity and combination therapies including AGN/Decursin to target Myc more efficiently could be a valuable avenue to explore in the treatment of B-cell lymphoma.

## **Biography**

Eungyoung Kim has completed her graduation at the Department of Biological Sciences, Pusan National University in 2016. She is currently pursuing Master's degree in the Department of Integrated Biological Science from Pusan National University.

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