

World Food Science & Technology Congress

October 15-16, 2018 Athens, Greece

The ginsenoside metabolite compound K inhibits hormone-independent breast cancer through promoting cyclin D1 degradation

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Various types of ginsenosides are present in ginseng and have been recognized for their health-promoting effects. Compound K (CK) is a metabolite of ginsenoside Rb1 and reportedly exerts chemotherapeutic effects against several types of cancers. However, the anti-cancer effect and the molecular mechanism of CK against hormone-independent breast cancer are unknown. Through a direct comparison, it was discovered that CK elicits the strongest anti-cancer effect against breast cancer cells when compared to other ginsenosides. CK treatment suppresses the growth of hormone-independent human breast cancer cells and induces G1 phase cell cycle arrest. CK also markedly suppresses tumor growth in a mouse xenograft model, concomitant with the suppression of cyclin D1 via protein degradation. These findings suggest that CK can be used to target hormone-independent breast cancers by inducing degradation of cyclin D1.

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