Amygdalin as a potential breast cancer therapy via BAX/BCL-2 genes mediated apoptosis

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Abstract

Amygdalin, a natural compound derived from apricot seeds, has been reported to induce apoptosis in cancer cells. This study evaluated its effects on the human breast cancer cell line MDA-MB-231 by assessing BAX and BCL-2 gene expression. Treatment with amygdalin (1 mg/ml and 10 mg/ml, 24 h) resulted in significant downregulation of BCL-2 mRNA and upregulation of BAX mRNA, indicating activation of apoptotic pathways. While these results support the pro-apoptotic activity of amygdalin, the underlying molecular interactions with apoptosis-related proteins remain unresolved. To address this, molecular docking simulations are needed to predict amygdalin's potential binding affinity with BCL-2 family proteins and clarify its mechanism of action. Integrating in vitro findings with in silico modeling will provide stronger evidence for amygdalin's therapeutic potential against breast cancer.

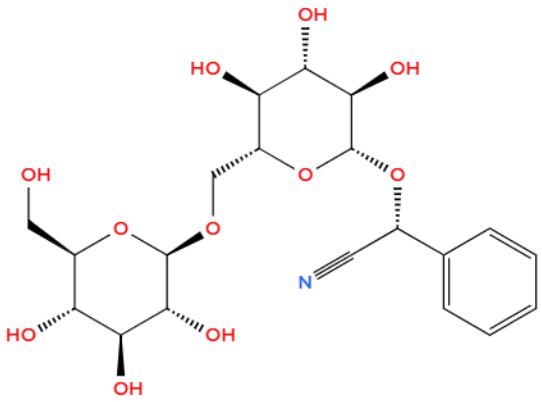

Figure 1: Molecular model of amygdalin, illustration by MolView©