

Induction of apoptosis in breast cancer cells MCF7 by K. Foetidissima

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Kedrostis foetidissima has been used by tribes throughout Africa to treat various human and livestock ailments. K. foetidissima, has been shown to inhibit the growth of breast cancer cell lines in vitro by induction of apoptosis in previous studies of our group. However, the mechanisms of action are not completely understood. An apoptosis-related gene expression profiling analysis provided a clue that both p53 and bax gene were upregulated at least two and three fold respectively in response to K. foetidissima treatment in MCF7 cell. Here, we further investigated the role of RBBP6 in apoptotic effect induced by K. foetidissima. We observed that protein as well as mRNA level of RBBP6 was inhibited by K. foetidissima in a dose-dependent manner. We found that K. foetidissima increased both Ser392 and Ser20 phosphorylation levels of transcription factor p53 protein, which could promote its transcriptional activity. Moreover, induced by K. foetidissima, the recruitment of p53 to RBBP6 for degradation was reduced. The involvement of RBBP6 in K. foetidissima -induced apoptosis was supported by the studies that introducing siRNA targeting RBBP6 to MCF7 cells remarkably interfered K. foetidissima -caused apoptotic effect as well as the activation of caspase-3. The findings suggest that downregulation of RBBP6 via p53 pathway is an important mechanism of K. foetidissima contributing to its ability to induce apoptotic effect. Since growing evidence found a significant increase of RBBP6 expression in a large variety of tumour types, K. foetidissima may represent a promising candidate in the intervention of cancer via targeting RBBP6.