Inhibition of Otub1/c-Maf by herbal acevaltrate induces myeloma cell apoptosis

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Video Byte

Keywords: acevaltrate, valerian, myeloma, Otub1, c-Maf, oncogenesis, Cell Communication and Signaling

Posted Date: October 16th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-978637/v1>

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Abstract

Multiple myeloma (MM) is a cancer of blood cells causing nearly 100,000 deaths per year worldwide. Although treatments are available, MM is incurable, and new therapeutic targets are needed. One new treatment candidate targets a pathway involved in myeloma development. The transcription factor c-Maf promotes MM cell proliferation, adherence to bone marrow stromal cells, invasion, and metastasis. Downregulating c-Maf has been shown to enhance MM cell sensitivity to chemotherapeutic medicines and even cause MM cell death. In a recent study, researchers screened natural compounds for potential inhibitors of c-Maf and its stabilizer, the deubiquitinase Otub1. Using a series of molecular assays, they identified the compound acevaltrate (AVT), isolated from the flowering plant *Valeriana glechomifolia*. AVT disrupted the interaction between Otub1 and c-Maf, leading to c-Maf degradation. c-Maf transcriptional activity was also inhibited, resulting in decreased MM cell survival. Finally, AVT triggered MM cell apoptosis in vitro and impaired myeloma xenograft growth in vivo. Although further studies are needed to fully understand the mechanisms underlying its action, these results suggest that AVT may be a promising candidate for MM treatment.