

## Letter to Editor

# The Use of Dandelion for Treating Various Types of Cancers

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## Dear Editor

Dandelion is a traditional Chinese herb that belongs to the "Asteraceae" family. It is primarily produced in the Chinese provinces of Shaanxi, Hebei, and northeastern areas. The taste of dandelion is sweet, slightly bitter, and cold. As it has been stated in the traditional Chinese medicine (TCM) theory, its functions are to clear heat, resolve toxin as well as swelling, and eliminate binds in the clinical applications of an upper respiratory tract and urinary tract infections, acute bronchitis, and inflammatory as well as cancers diseases (1).

Growing evidence has revealed that dandelion was capable of exhibiting anti-inflammatory activity. Ovjaje P *et al.* reported an aqueous dandelion root extract (DRE) consisting of bioactive phytochemicals such as  $\alpha$ -amyrin,  $\beta$ -amyrin, lupeol, and taraxasterol that selectively induced the cell death of colon cancer cells by more than 95% but with no toxicity to normal cells (2). Nguyen C *et al.* indicated that DRE extract could exhibit selective anticancer activity. It enhanced the induction of apoptosis and significantly reduced the tumor burden in prostate cancer xenograft models (3). Zhu H *et al.* reported that DRE could specifically and effectively suppress the proliferation, as well

as migration via targeting lncRNA colon cancer-associated transcript-1 (CCAT1) in human gastric cells without inducing toxicity in normal cells (4). Rehman G *et al.* discovered that the methanolic extracts of DRE could promote the phosphorylation level of AMP-Activated Protein Kinase Pathway (AMPK) on HepG2 cells. The dandelion could control AMPK for the antiproliferative activity of cancer cells (5). Trinh N *et al.* demonstrated that the impact of DRE on the proliferation of breast cancer stem cells (BCSC) induced cells death, expression of genes of death receptor signaling pathways, and production of reactive oxygen species (ROS) by BCSCs (6).

In general, the mechanism of DRE for treating cancer remarkably increased the tumor necrosis factor (TNF)-alpha and interleukin (IL)-1alpha production (7). DRE caused the collapse of the mitochondrial membrane potential, resulting in pro-death autophagy (8). It also dampened the PI3K-AKT signaling pathway which regulated the levels of p-PI3K, p-AKT, and p-mTOR for enhancing the immune response (9).

The clinical studies of DRE as a natural agent in fighting cancer are ongoing. It is believed that Dandelion root might kill 98% of cancer cells within 48 hours, but confirmation of this phenomenon requires further investigation (10). Basically, the European

Commission and the British Herbal Pharmacopoeia give a guideline with the dosage for adults that are considered as safe, i.e. 0.75 to 1.0 grams daily of the DRE (11). Some individuals may undergo side effects such as heartburn, diarrhea, upset stomach, and irritated skin (12).

## Conclusion

All of the above-mentioned information reveal that dandelion is a potential candidate for treating several types of cancers. Nevertheless, further studies should be conducted on the dosage, clinical trials, and safety assessments in the xenograft models of human cancer which is central to the screening and evaluation of dandelion as an anticancer agent. Besides, there are some other remedies in traditional Chinese medicines, including curcumin, resveratrol, and berberine that can also cause the destruction of cancer cells by these mechanisms that are worth investigation.

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## Conflict of Interest

The authors declare that they have no conflict of interest.

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