

# A Brief Review on Anti-Cancer Property of Bee Venom

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**Abstract:** *Cancer immunotherapies, including immune checkpoint inhibitors, elicit long-term clinical responses but many cancer patients do not respond. Intensive efforts are therefore underway to identify additional immune pathways that may be modulated to enhance the efficacy of existing immunotherapies. Bee venom strongly stimulates the immune system, and is used as a complementary therapy to treat cancer pain in patients with advanced tumors in China. Bee venom contains several allergenic protease inhibitors and peptides. It triggers hypersensitivity reactions; that is, it is an immune system agonist. The generation of a spontaneous T cell response against tumor-associated antigens requires innate immune activation; this drives type I interferon production. We report a patient with a relapsed and refractory liposarcoma who had undergone several operations, chemotherapies, and radiotherapies. The tumor was large. The patient had attained the maximum radiation exposure dose. The tumor was resistant to chemotherapy and was infiltrating the pericardium, lungs, and diaphragm. The patient was a poor candidate for resection. He thus received apitherapy (a combination of bee venom and acupuncture) to control pain; then apatinib (an anti-angiogenic drug) was given to inhibit tumor growth but was terminated early because the patient could not tolerate the side effects. Subsequently, a programmed death 1 inhibitor was combined with apitherapy. Bee venom served as an innate immune system agonist promoting immune cell priming and recruitment in the tumor microenvironment. The patient was finally able to undergo radical liposarcoma resection, and no evidence of recurrence was found at re-examination 16 months after surgery.[4][5] [6] [7] [8].*

**Keywords:** Cancer immunotherapies.

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