

# Anti-Angiogenesis Properties of a Common Weed - *Convolvulus Arvensis*

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*Convolvulus* is derived from the Latin, *convolvere*, meaning "to entwine", and *arvensis*, meaning "of fields."<sup>1</sup> The genus *convolvulus* contains about 250 species. *Convolvulus* is an ubiquitous weed, but *arvensis* is understood to contain alkaloids that are toxic. However, extracts of the plant, largely comprised of proteoglycan molecules (PGMs), appear nontoxic in animal studies, and have been shown to have potent anti-angiogenetic effects.<sup>2</sup>

Most people assume weeds have no therapeutic value. However, the difference between weeds and herbs may merely be our understanding of them. Weeds are unwanted plants and are considered harmful, as they compete with crops for light, moisture and nutrients, and harbor insects and diseases harmful to crops. For farmers and agriculture specialists, weeds are unwanted plants, but for herbalists, all weeds are useful plants.<sup>3</sup> Such is the case of *convolvulus arvensis*; new research is showing it has great promise as a useful, safe and nontoxic chemotherapeutic agent.

As tumors grow, they secrete substances that promote new blood vessel growth (angiogenesis). Recruitment of new blood vessels plays a crucial role in tumor survival and growth, and every aspect of tumor growth requires rapid vascular development. Tumors secrete substances that block local regulatory control measures and allow for unnaturally fast growth and replication. Many natural and chemical agents have been employed with the aim to halt or block angiogenesis, in an attempt to arrest malignant growth, development and metastasis.

One well-known natural substance promoted for its ability to halt tumor growth is shark cartilage. The data supporting it is conflicting, and its popularity has made it a high-priced item, due to supply-and-demand laws of economics and the lack of abundant availability. Finally, environmental and ecological concerns limit the usefulness of shark cartilage as a chemotherapeutic agent.

Recently, however, a natural substance from a common weed has been found to inhibit angiogenesis 100 times more effectively than shark cartilage, and it is ubiquitous.<sup>4</sup> Extracts of *convolvulus arvensis*, ironically known as "the cancer of weeds," hold great promise as a tool in the fight against cancer.

Because of an anecdotal report of complete remission of human ovarian carcinoma after ingestion of *convolvulus arvensis* extract, it was tested for its anti-angiogenic and immunogenic effects. It was found that its high molecular weight water extract contains almost no appreciable amount of alkaloids (devoid of its inherent toxicity) depleted during the extraction or manufacturing process. This proprietary extract is comprised primarily of PGMs and marketed in the U.S. under the brand name Vascustatin.<sup>5</sup>

In models of angiogenesis, mouse sarcoma, mouse Lewis lung carcinoma and human lymphocytoma, PMG was found to have potent anti-angiogenic and tumor-inhibitory effects. Inhibition of angiogenesis was 18 to 73 percent; inhibition of tumor growth was 35 to 80 percent in the cancer models represented; and lymphocytes were increased 12 to 46 percent in respective models.

In summary, *convolvulus arvensis* extracts show profound promise as anticancer agents, largely through the ability to inhibit angiogenesis, and the weed's stimulatory effect on the immune system. The exact details regarding its anti-angiogenesis mechanism are not completely understood, and should be studied further to elucidate its anti-tumor effects and mechanisms of action.

### *References*

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