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# HerbClip™

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- File: • Cancer  
• History of medicine  
• Chemotherapeutic plants

Date: April 22, 2001

HC 020614-192

RE: Plants Used for Cancer Therapy in Ancient and Medieval Times

Riddle JM. *Quid Pro Quo: Studies in the History of Drugs*. *Variorum* 1992:319-330.

Ancient and medieval physicians often treated, with chemicals, tumors and lesions which seem (allowing for translation errors, shifts in meanings of words, and differing modes of diagnosis) to have been cancers. In early modern medicine, chemical cancer treatments were abandoned for surgery. Some date the "second age of chemotherapy" from the discovery of the antimetabolic properties of colchicine, derived from autumn crocus (*Colchicum autumnale*), also used as an anti-inflammatory agent to treat gout, one of the traditional uses of autumn crocus.

Greco-Roman, classical Islamic, and medieval physicians' writings reveal their use of many substances that now provide anticancer compounds. Dioscorides (fl. ca A.D. 50-79) used autumn crocus against tumors. Riddle sees the potential to identify other chemotherapy agents.

Imprecise plant identification complicates the search. While Galen (A.D. 129-post 210) used three herbs for malignancies, their identity is uncertain. "White thorn" may be *Acacia albida*, *Euphorbia antiquorum*, or *Cnicus arvensis*. Each is used in East Asia against cancer. His *damasonion* may be *Alisma plantago*, and his *orchis* may be *Ophrys apifera* or *Orchis* spp. (orchids). *Alisma* is used in China for leukemia. Various orchid species are used in Europe as anticancer drugs.

Nightshade (*Solanum* spp.), not used in modern medicine, was used against cancers by Galen, Dioscorides, and Celsus, and in traditional medicine around the world today. Riddle says that the small number of plants so employed by the ancients makes modern investigation practical. Dioscorides used only three treatments for *karkinoma*: frankincense (*Boswellia* spp.), nettle (*Urtica pilulifera* and *U. urens*), and figwort (*Scrophularia peregrina*).

Dioscorides recommended many plant alkaloids against tumors. One of them, from the squirting cucumber (*Ecballium elaterium*), has been found to have "strong antitumor activity". He also used castor bean (*Ricinus communis*) for "protocancerous conditions". Abu Mansur (fl. 968-977) prescribed castor bean for tumors. It is used against cancer in traditional Chinese medicine, Ayurvedic, South American, Indian, San Dominican, and modern Californian folk medicine. Ricin, from castor bean, is used today in chemotherapy research. Dioscorides recommended spurge (*Euphorbia* spp.), in the same family as castor bean, for problems suggestive of cancer, noting that it can cause weight, hair, and color loss, and even death. Galen recommended spurge for tumors. Constantinus Africanus (d. ca. 1087) recognized spurge as a dangerous drug which "acted to purge black bile and viscous humors". Because

cancer was, in the theory of the day, caused by an excess of "black bile", any drug which purged it might be suitable as an antitumor agent. Spurge is used against cancer by the Bantu of South Africa, and in India and Finland, and in other folk traditions.

Dioscorides listed *Vinca major* in the sequence of plants with alkaloids having antitumor qualities, but did not show it as an antitumor agent. In fact, it has no active antitumor compounds. Pliny (A.D. 23-79), however, said that *vicaperva* (= *Vinca* "dried tumors"). *Catharanthus* is closely related to *Vinca*. One of its members, *C. roseus*, yields vinblastine and vincristine, used against acute lymphocytic leukemia, Hodgkin's disease, carcinoma, and lymphosarcoma. *C. roseus* was classified as *V. rosa* until 1948. It is possible that Pliny actually referred to it.

Other anticancer plants included the legumes bitter vetch (*Vicia ervilla*) and horse bean (*V. fava*). Dioscorides recommended *Vicia* in contexts suggestive of deep-seated, papillary, and superficial epithelioma and nonspecific, metastatic inflammatory lesions of ulcerating cancers. Vetch contains vicianin, used for cancer into the nineteenth century.

Pseudo-Apuleius (fourth century A.D.) wrote that birthwort (*Aristolochia clematitis*) was good for nasal carcinoma. Confusing Latin and Greek terms for nostril and skin make it unclear whether he meant that birthwort was used against benign nasal tumors or skin cancer. Other classical authorities do not ascribe antitumor properties to birthwort. However, in 1969, aristolochic acid from birthwort was found to have such qualities. (Aristolochic acid in Chinese herbs of the genus *Aristolochia* has become the subject of FDA concerns due to literature suggesting potential nephrotoxicity and carcinogenicity.)

Studies on cabbage and metabolism in the early 1970s revealed that cabbage compounds inhibit chemical carcinogenesis in rats. Cabbage juice also has antimutagenic qualities. The idea of using cabbage and other *Brassica* species against cancer arose only recently in modern research. But Cato the Elder (234-149 B.C.) recommended it for cancer, as did Dioscorides. While they used cabbage as an anticancer drug, today's research focuses on its dietary antimutagenic properties to be used in a modern diet to help prevent certain cancers. It may be coincidence that it is seen as an antitumor agent by both ancient and modern authorities.

Animal sources for anticancer drugs include the blister beetle (*Mylabris phalerata*), used in traditional Chinese medicine and mentioned by Dioscorides. Modern Chinese researchers, following a survey of historical medicines, isolated cantharidin from the beetle, therapeutic for primary hepatocarcinoma, intestinal carcinoma, and other cancers.

Dr. Riddle suggests that subjecting ancient and traditional recommendations to modern scientific methods may reveal other anticancer agents.

— Mariann Garner-Wizard

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