
The Rosy Periwinkle: Myth, Fact and the Role of Independent Scientific Research

**Manisha A. Desai, Ph.D.
Assistant General Patent Counsel
Eli Lilly and Company**



Answers That Matter.

Agenda

- History and early research
- Development of vinca alkaloids for treatment of cancer
- Claims of “biopiracy”
- How would such a discovery be treated today?
- Conclusions

History of the Periwinkles

- Vinca species are widespread, widely referenced, and their uses have been publicized for centuries:
 - AD 77-79: Pliny the Elder, in *Naturalis Historiae*
 - 14th Century: Chaucer, references to “parwynke”
 - 1480: Apuleius’s *Herbarium*, as a treatment for “devil sickness and demoniacal possessions”
 - 1552: Macer’s *Herbal*, to counter “wykked spirits”
 - 1657: William Coles’ *Adam in Eden* describes its use for wounds and other inflammatory conditions



Scientific Research in the Early 20th Century

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CURRENT MEDICAL LITERATURE

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Roentgen-Ray Therapy. F. W. Weber.—p. 27.

Injuries and Accidents of Childbirth. H. E. Allanson.—p. 30.

Action of Vinca (Periwinkle) on Blood Sugar of Rabbits. D. Epstein.—p. 35.

Two Cases of Partial Gastrectomy. R. L. Daly.—p. 38.

Case of Gastrectomy. J. J. Levin.—p. 39.

Continued Interest in Vincas for Diabetes

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- History of Spectacles. E. T. Smith.—p. 578.
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Ectopic Gestation: Fifty Cases. J. B. Dawson.—p. 616.
Corneal Ulcer: Severe Types. J. C. Douglas.—p. 619.
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*Some Forms of Strangulated Hernia. E. M. Fisher.—p. 623.
*Vinea (Periwinkle) Treatment of Diabetes. L. J. J. Nye and M. E. Fitzgerald.—p. 626.
*Two Prognostic Tests in Tuberculosis. H. G. Anderson.—p. 627.
Twin Ectopic Pregnancy. J. B. Dawson.—p. 628.

But Scientific Data Refutes Anecdotes

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CURRENT MEDICAL LITERATURE

JOUR. A. M. A.
JAN. 12, 1929

Vinca Treatment of Diabetes.—*Vinca* is a perennial plant which grows plentifully in the coastal districts of Queensland from Moreton Bay to Thursday Island. The species of the genus *Vinca* are commonly known as periwinkle. It belongs to the natural order *Apocynaceae*. The flowers are sometimes pink, *Vinca rosea*, and sometimes white, *Vinca alba*. It appears that this plant was first used as a remedy for diabetes in Africa and in Queensland; today a great number of persons are taking it daily in the belief that they are benefited by its use. Three alkaloids have been isolated from *Vinca rosea*. Nye and Fitzgerald have also prepared a tincture with which most of their experiments have been made. They have carried out tests on five patients, in all of whom the results of treatment were uniformly unsatisfactory. The vinca treatment had no appreciable effect on the fasting blood sugar nor did it diminish the rise of the curve after dextrose. The beneficial effect felt by the patients who are so confident of its results is possibly due to the fact that the preparation has a weak digitalis-like action in common with other members of the *Apocynaceae*.

Vinca Extracts for Treatment of Cancer: Key Facts

- Research was conducted in 1950's
- Two research groups working simultaneously in the late 50's
 - U. Western Ontario (Canada) scientists investigating anti-diabetic properties
 - Lilly scientists screening more widely for endocrine, oncology, neuroscience, antimicrobial, antiviral, or insecticidal properties
 - All extracts subject to the same screens, “regardless of medical claims found in the literature.”
- Sources of vinca plant material
 - Evidence suggests Western Ontario team received first sample from Jamaica.
 - Lilly received first sample from commercial biological supplier, and plant material for commercialized product was sourced worldwide from any available supplier.
 - To ensure constant supply, plants eventually sourced from commercial growers in Texas, United States.

Clinical Uses

- Velban® (vinblastine sulfate)
 - Approved 1961
 - Indications: Hodgkin's disease and treatment-resistant choriocarcinoma
- Oncovin® (vincristine sulfate)
 - Approved 1963
 - Indications: acute childhood leukemia

Housewife Writes Thanks For New Anticancer Item

Have you ever wondered how the product you researched, developed, manufactured, packaged, or shipped served a patient. A housewife in Menomonee Falls, Wisconsin, whose husband has been treated with some of the company's new anticancer products describes the results they had for her husband.

"Three years ago my husband had extensive surgery for a neoplasm in the bronchus, left lung, and extending slightly onto the lower lobe of the right lung. We were and are thoroughly familiar with the high mortality rate for this type of cancer, and we experienced all the sorrow, dread and terror usually associated with this disease. At that time, my husband had the usual physical therapy, drug therapy, etc. I will admit that this therapy is very expensive; however, I have not begrudged too much the expense.

"When I stopped in our drug

store yesterday, the druggist asked how Bill was getting along, and I told him the truth—that Bill looks, acts, and feels better than he has for 15 years. That's when the druggist made the startling statement. He said, 'You can thank Eli Lilly for that.'

"So I do. I thank you from the bottom of my heart.

"You see, Bill's just an ordinary man, doing an ordinary job. But he means everything to me and to our children. I thank you for the three years we have had, and for the years that we will have in the future. The children thank you for letting them have a father during their teen years. We are all aware that this might not be permanent, but the years you have given us are sincerely appreciated.

"I thank you, Eli Lilly. And I ask that you extend our appreciation to everyone in your organization who has made this possible."

“Famous Case” of What? Successful Scientific Research Efforts

Commercialization of traditional medicines - Wikipedia, the free encyclopedia - Microsoft Internet Explorer provided by Eli Lil

http://en.wikipedia.org/wiki/Commercialization_of_traditional_medicines


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Commercialization of traditional medicines - Wikipedia,...

- 3.2 Convention on Biological Diversity (CBD)
- 3.3 Bioprospecting contracts
- 4 Ownership
 - 4.1 Ownership rights of national governments
 - 4.2 Ownership rights of local communities
 - 4.3 All humankind as the owner of biodiversity
 - 4.4 Consequentialist arguments
 - 4.5 Virtue-based arguments
- 5 Traditional knowledge database
- 6 See also
- 7 References
- 8 Bibliography and resources
- 9 External links

Biopiracy and bioprospecting [edit]

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Bioprospecting is an umbrella term describing the discovery of new and useful biological mechanisms, either with or without the help of indigenous knowledge, and with or without compensation. ^[1] In this way, bioprospecting includes biopiracy and also includes the search for previously unknown compounds in organisms that have never been used in traditional medicine. ^[2]

Biopiracy is a situation where indigenous knowledge of nature is exploited for commercial gain with no compensation to the indigenous people themselves. ^[3] Detractors of utilization of natural knowledge such as Greenpeace ^[4] claim these practices contribute to inequality between developing countries rich in biodiversity, and developed countries hosting companies which engage in *biopiracy*.


Famous cases [edit]

The rosy periwinkle [edit]


The rosy periwinkle case dates from the 1950s. The rosy periwinkle, while native to Madagascar, had been widely introduced into other tropical countries around the world well before the discovery of vincristine. This meant that researchers could obtain local knowledge from one country and plant samples from another. The locally known medical properties of the plant were not the same as the medical properties discovered and commercially used by Eli Lilly ^[citation needed]. The use of the plant as a cure for diabetes was the original stimulus for research, but cures for cancer were the most important results. Different countries are reported as having acquired different beliefs about the medical properties of the plant. ^[5] The Hodgkin's Lymphoma chemotherapeutic drug vinblastine is also derivable from the rosy periwinkle. ^[6]

The neem tree [edit]

In 1995 the U.S. Department of Agriculture and a pharmaceutical research firm received a patent on a technique to extract an anti-fungal agent from the neem tree (*Azadirachta indica*), which grows throughout India and Nepal; Indian villagers have long understood the tree's medicinal



A white Rosy Periwinkle [edit]



How Would Development of Vincas Be Treated under IGC Draft Articles?

- Does this meet the definition of “traditional knowledge?”
 - No evidence to suggest distinctive association with a single traditional community, customary practices, or intergenerational transmission of TK
 - Who bears the burden to prove TK was or was not used?
- Who would have the right to “prevent granting of IP rights?”
 - The People of Madagascar? Jamaica? South Africa? Why not Italy?
- Exceptions for independent invention?
 - With no express exception, is it determined on a country-by-country basis?
 - Jamaica may exempt independent invention, but Madagascar could demand benefits (despite no credible evidence TK existed or was used)?

Would These Drugs Even Have Been Developed Today?

- Would samples have been available for biological tests?
 - Many countries have no national laws governing ABS
 - Recent Lilly attempts to secure an ABS agreement with Cameroon failed for this very reason
- This should create an incentive to implement national laws that facilitate new discoveries
 - If Jamaica has no ABS regulations, why not enter into ABS agreement with Australia, where vinca is plentiful?

Conclusions

- Interest in periwinkle was driven by peer-reviewed, published research – not anecdotes, not TK
- There is no evidence of TK relating to use of periwinkle to treat cancer
 - Pliny's writings would not constitute TK under the Draft Articles
- Natural product R&D is already highly risky and complex
 - The path of uncertainty and controversy will be avoided
- If the IGC Draft Articles are unclear, there is a high risk that any commercial activity on natural products will result in claims of biopiracy
- Industry wants to comply with CBD obligations – a win/win for providers and patients – but we must have legal certainty

THANK YOU

Manisha A. Desai, Ph.D.
Assistant General Patent Counsel
Eli Lilly and Company

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