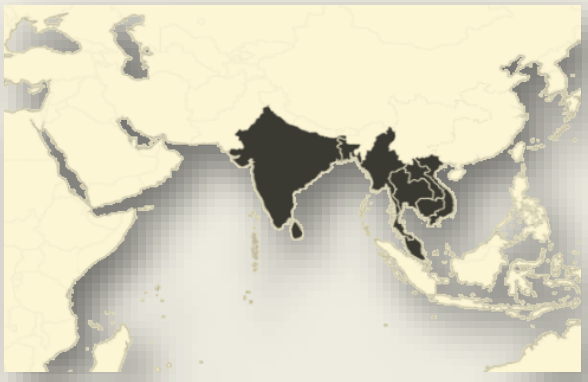
Strychnos nux-vomica
The Strychnine Tree

Strychnos nux-vomica Eugen Köhlers Medizinal Pflanzen-266, Public domain, via Wikimedia Commons

Strychnine, one of the world's most bitter and toxic substances, occurs in all species of the genus *Strychnos*, but most particularly in the seeds of *Strychnos nux-vomica*.

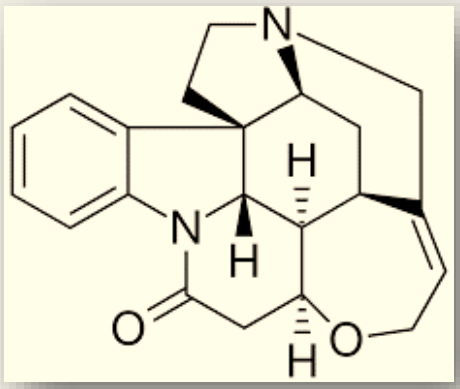
Strychnine is an alkaloid, a class of naturally occurring compounds produced in small amounts by other plants, fungi, bacteria and even animals. Some well-known plant alkaloids include caffeine, nicotine, cocaine, quinine, morphine and colchicine, their bitterness being an excellent deterrent to marauding predators. Many are highly toxic, and curare, an all-purpose term for arrow poisons, is produced from other *Strychnos* species including *S. toxifera* and *S. guianensis*. Strychnine acts as a neurotoxin, blocking the transmission of nerve impulses in the spinal cord and inducing involuntary spasms that can often be fatal.



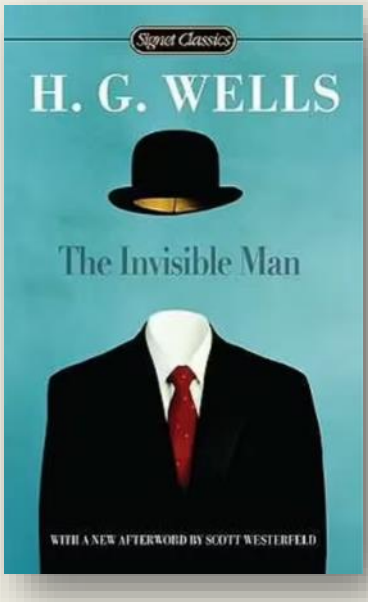
Strychnos nux-vomica is native to Sri Lanka, India, Bangladesh, Myanmar and south-east Asia. Map modified from: Royal Botanic Gardens Kew, Plants of the World Online: https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:547371-1

Two scientists received Nobel prizes for their work with strychnine: Sir Robert Robinson determined the structure of strychnine in 1946, and Robert B Woodward synthesized the alkaloid in 1954.

Strychnos sp. in far north Queensland. Photo: Karen Marais

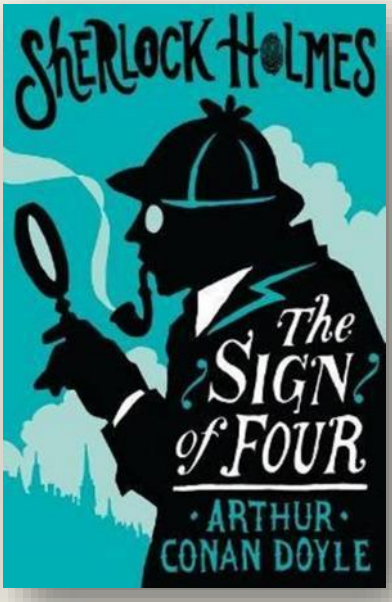


The genus *Strychnos* includes trees, shrubs, climbing shrubs and vines widely distributed throughout the tropics and subtropics, with the greatest diversity in Africa, America and Asia. There are about 190 species, many of which contain strychnine. Four species of *Strychnos* are found in Australia including two endemic species (found only in Australia) and two species that extend from southern Asia to northern Australia. The leaves and fruit of *Strychnos lucida* were used by Indigenous Australians as a fish poison, the white pulp from the fruit as a treatment for a range of skin complaints including burns, leprosy, rashes, scabies, weeping cuts and sores.



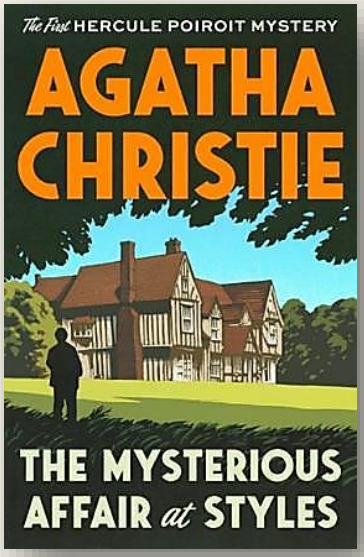
Fruit of *Strychnos nux-vomica* Photo: Lalithamba from India Uploaded by Vinayaraj, CC BY 2.0 https://creativecommons.org/licenses/by/2.0

Strychnine has been used historically for both therapeutic and recreational purposes. In India, medicinal and toxic effects have been known from ancient times. During the late 19th century and early 20th century, strychnine was used bizarrely as a performance enhancing drug and recreational stimulant. It was once popular with medical students as a stimulant when studying for exams and in the 1904 Olympics, an athlete, Thomas Hicks, was administered *a concoction of egg whites and brandy laced with a small amount of strychnine to boost his stamina*. He did win the marathon, but collapsed, hallucinating, soon after. In that famous work of fiction, *The Invisible Man*, H. G. Wells wrote that *Dr Griffin found strychnine to be immensely beneficial. Griffin had a little breakdown. He started to have nightmares and was no longer interested in his work. But he took some strychnine and felt energized.*

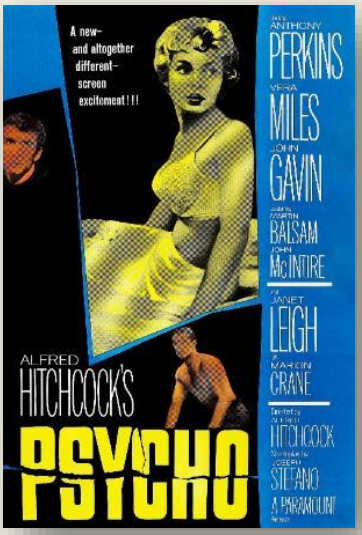


The introduction of strychnine into Europe followed its use to control rats on sailing ships. In the late

1800s, an estimated 450 tonnes of *Strychnos* seeds were imported into London where *Vermin Killer* was readily available for purchase by the general public not only to control rats and mice, but also dogs and cats.



The deadly effects of strychnine inevitably found their way into popular writing in Victorian England. The macabre grimace on the face of a victim in Arthur Conan Doyle's novel, *The Sign of Four*, allowed Sherlock Holmes's companion, Dr Watson, to deduce the man had been poisoned with strychnine. In the movie *Psycho*, Norman Bates poisoned his mother with strychnine before the classic knife murder through the shower curtains. And perhaps the most famous of all murder mystery writers, Agatha Christie, featured strychnine in her first *Hercule Poirot* novel, *The Mysterious Affair at Styles*. It seems that her description of the gruesome effects of the poisoning was so accurate that a review in *The Pharmaceutical Journal* reported: *this novel has the rare merit of being correctly written – so well done, in fact, we are tempted to believe that the author had pharmaceutical training*. And of course, this was quite true, as Agatha Christie trained as a pharmacist in a hospital during WWI.



Neil Bradbury, Professor of Physiology and Biophysics at the Rosalind Franklin University of Medicine and Science in Chicago writes: *Why have so many writers chosen to incorporate strychnine into their works of fiction? Likely because poisonings with strychnine have been so numerous and widely documented. Indeed, strychnine is listed third in the top ten poisons by number of criminal cases, behind only arsenic and cyanide.*

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Bradbury N. A brief history of strychnine, the poison of choice for Agatha Christie, Arthur Conan Doyle, and scores more – But Why? https://crimereads.com/strychnine-poison-christie-conan-doyle/
Conn B J, Brown E A. 1993. Notes on *Strychnos* L. (Loganiaceae) in Australia. *Australian Systematic Botany* 6: 309-319.
Wikipedia:https://en.wikipedia.org/wiki/Alkaloid#:~:text=Alkaloids%20are%20a%20class%20of,may%20also%20be%20termed%20alkaloids.
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