Strychnine Encyclopedia Article

Strychnine

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Strychnine

Strychnine is a colorless, crystalline compound which has the molecular formula $C_{21}H_{22}N_2O_2$. It is an extremely poisonous organic compound that has a unique molecular structure which is a complex of interlocking rings. It is used as a poison bait for rodents.

Joseph-Bienaimé Caventou (1795-1877) and Pierre-Joseph Pelletier, both French chemists, collaborated to discover the plant source of alkaloid strychnine in 1818. Pelletier later developed a means of extracting strychnine from the seeds of *nux vomica*, a tree found in India. For some time strychnine was used medicinally as a remedy for heart and respiratory complaints, and as a stimulant. Today it is not used because a dosage large enough to be effective would also be toxic. Strychnine was just one of many plant alkaloids isolated by Caventou and Pelletier.

American chemist Robert Burns Woodward (1917-1979) had a history of successfully synthesizing complex organic compounds. With William von Eggers Doering, he had synthesized quinine in 1944. Woodward succeeded in discovering the structure of strychnine in 1949, and in 1954 he manufactured it. Woodward employed a process that involved several stages in which careful planning was required to control the stereospecificity of the compounds. The importance of Woodward's synthesis is not that strychnine became more readily available or cheaper, as happens with many such discoveries. Rather, his findings were important because with them Woodward proved that it was possible to synthesize a very complex molecule from simple chemicals, a theory that chemists had long debated.