

From dyes to medicines

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The transition from dyes to pharmaceuticals followed a scientific logic. Dyes and drugs are both organic compounds, produced by the same chemical techniques. Many early drugs were in fact discovered by chemists working on dyes. The German physician Paul Ehrlich, who observed that certain dyes stained specific tissues and bacteria, developed the idea of a magic bullet, a chemical that would selectively attack the cause of a disease. In 1909, he and his collaborators discovered Salvarsan, an arsenic compound effective against syphilis, which was produced by Hoechst and became the first modern chemotherapeutic drug.¹ The dye companies, which had the chemists, the laboratories and the production facilities, were natural candidates to produce drugs.

The Basel companies entered the pharmaceutical business at different times and in different ways. Ciba began producing pharmaceuticals at the end of the nineteenth century, among them antiseptics, and built a pharmaceutical department in the early twentieth century. Sandoz founded a pharmaceutical department in 1917 under the direction of the chemist Arthur Stoll, who had worked with the Nobel laureate Richard Willstätter. Stoll isolated ergotamine from ergot, a fungus that grows on rye, which Sandoz launched in 1921 as a drug for the treatment of migraine and for use in obstetrics.² Sandoz also introduced Calcium Sandoz, a calcium preparation that became a commercial success in the 1920s and 1930s.

Stoll's research on ergot alkaloids led to one of the most famous discoveries in the history of Basel chemistry. In 1938, his colleague Albert Hofmann synthesised lysergic acid diethylamide, LSD-25, in the search for a circulatory stimulant. The substance showed no interesting effects in animal tests and was set aside. In April 1943, Hofmann synthesised it again and, after accidentally absorbing a small amount, experienced its psychoactive effects. A few days later, he took a deliberate dose and rode home on his bicycle in a state of altered perception that has become

legendary as Bicycle Day.³ Sandoz distributed LSD for research purposes in the 1950s and 1960s, before its recreational use and prohibition. The history of LSD, which Sandoz could neither control nor profit from, illustrates the unpredictable consequences of pharmaceutical research.

1 Notes

1. On Paul Ehrlich's concept of the "magic bullet" and the discovery of Salvarsan (1909), produced by Hoechst from 1910, see the standard literature on the history of pharmacology. To be verified. ↩
2. On Arthur Stoll (1887–1971), the foundation of the Sandoz pharmaceutical department in 1917, the isolation of ergotamine (1918) and its introduction as Gynergen, see HLS, article "Stoll, Arthur"; the history of Sandoz. Dates to be verified. ↩
3. On Albert Hofmann's synthesis of LSD-25 in 1938 and his discovery of its psychoactive effects in April 1943 (self-experiment of 19 April 1943), see Albert Hofmann, LSD – Mein Sorgenkind, 1979; HLS, article "Hofmann, Albert". To be verified. ↩

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