Digitalis Encyclopedia Article

Digitalis

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Digitalis

An extremely valuable drug in the treatment of heart disease, digitalis is derived from the leaves of the foxglove plant (*Digitalis purpurea*), a popular garden flower. Herb doctors and "old wives" had used foxglove for centuries, but the plant's efficacy was unknown to the physicians of early modern times.

In 1775, the eminent English physician **William Withering** (1741-1799) began studying digitalis. Withering's keen interest in botany led him to collect plant specimens, as did his love for one of his patients (whom he married), a flower painter. Withering noted that old country women used foxglove to treat dropsy (**edema**), an accumulation of fluids caused by a failing heart. Willing to consider these "old wives' tales," Withering embarked on a detailed study of digitalis. He determined the most effective treatment form--a powder made from dried leaves picked just before the plant blossomed--and, of critical importance, the correct dosage for different cardiac conditions. Equally important, Withering established clear standards for when to discontinue administration of the drug, which can be toxic.

Withering published a monograph on his findings, *Account of the Foxglove*, in 1785, but he had spread knowledge about the "new" drug before then, because digitalis became part of the Edinburgh *Pharmacopoeia* in 1783. In spite of Withering's clear warnings about overdoses of digitalis, the drug was commonly prescribed in dangerously large doses for a host of medical conditions. Finally, in the early twentieth century, investigators clarified the effect digitalis had on the heart and the correct circumstances for the drug's use.

The active principles of digitalis eluded researchers until the mid-1800s. E. Homolle and Theodore Ouevenne won a cash prize in 1841 from the Societe de Pharmacie in Paris when they isolated digitalin. Oscar Schmiedeberg (1838-1921) isolated the highly potent digitoxin in 1875. The English chemist Sydney Smith obtained digoxin from woolly foxglove (*Digitalis lanata*) in 1930.

When used correctly digitalis increases the circulatory power of the heart without increasing the heart rate. It remains a widely prescribed heart medicine today, especially for heart failure.