Gerhard Domagk Discovers Chemotherapy

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Gerhard Domagk (1895-1964)

Domagk was born in Lagow, Germany. He then entered medical College at Kiel; when WW-I broke out, he served in the Army, and was wounded in December 1914. In 1918 he resumed his medical studies at Kiel and obtained his medical degree in 1921.

Domagk was soon hired by the German dye firm, I. B. Farben industry in 1921, and was assigned study of the dyes and compounds in them, with the hope of discovering an antibiotic. In 1932, after testing hundreds of dyes Domagk synthesized an orange-red compound, p-amino benzene-sulphanilamide and named it “Prontosil rubra”. He was excited to find that Prontosil injections had a powerful effect on streptococcal infections in mice. This held good for humans too, as Domagk discovered in a most direct way when his own daughter had a severe streptococcal infection. In desperation, he injected her with a good quantity of Prontosil, which led to her dramatic recovery.

Prontosil was issued to several doctors for field test, and was found to be just as effective in patients. Drug was patented by Domagk and Farben industry. Particular trait of the compound was that its action proved superior in vivo than in vitro (being bacteriostatic). Farben industry delayed publication of Domagk’s work till two years in 1935.

Reading Domagk’s article, Pasteur Institute made Daniel Bovet to study the individual components in Prontosil. The German patent had covered only the parent compound p-amino-benzene-sulphanilamide. Bovet discovered an amazing fact, that the effective principle of Prontosil was only sulphanilamide (1936). Sulphanilamide was widely tested and was made available to every researcher. It provided the first successful therapies for many bacterial diseases. and this group proved to be forerunners of antibiotics.

Prontosil gained further fame, when it was, used to save the life of President Franklin Roosevelt’s son who was in a critical condition due to pneumonia. Sulphanilamide powder became stalk medicine for medical corps during WW-II and undoubtedly saved many lives.

Domagk was awarded the Nobel Prize in Medicine or physiology for his discovery. However In 1939, Hitler not only prevented his acceptance, but forced him to send a letter rejecting it. Domagk was able to receive his Prize Medal only in 1947; the prize money by then had been redistributed.

Later, Domagk with others attacked the problem of developing chemotherapy for tuberculosis, mainly thiosemicarbazones (Conteben) and isonicotinic acid h1drazide (Neoteben). He died in 1964.