

LETTER**Salvarsan: Early Days of a New Chemotherapeutic Drug**E. SERÉS¹ - F. BOSCH^{1,2}

The history of antimicrobial therapy is full of examples of the variety of receptions given to valuable new discoveries. They span from prompt and definitive acceptance, as in the case of rifampin, to misgivings about the real value because of potential toxicity, as happened with vancomycin. In this context, and considering that 2010 marks the centenary of the introduction of arsenobenzol (Salvarsan)¹, the first truly effective systemic antimicrobial, it is perhaps appropriate to review the initial reception of this drug.

The reference to the “magic bullet” when describing Salvarsan did indeed originate immediately after its anti-syphilitic activity was described. As was perhaps to be expected, the scientific literature was initially full of praise from physicians who tried the new drug, even at the expense, in the case of Americans, of travelling to Germany to get it. In the beginning, there were a number of problems with use of Salvarsan, many arising from the presence of impurities in the initial batches and also due to the inherent toxicity of the drug. Moreover, the solubility of Salvarsan posed a serious handicap and the novel route of administration—intravenously—added to the difficulties and risks. Thus, one would not have been surprised to read in *JAMA*, in 1911, that “Salvarsan is not simply an additional remedy for syphilis; it marks an epoch in medicine”², while in the same year, in the *Boston Medical and Surgical Journal*, it was described as being a mere ally of mercury³.

It is noteworthy that, as in the case of AIDS almost a century later, Salvarsan encountered what we could call ‘devoted de-

niers’. It is not surprising to find that during World War I, this phenomenon was particularly marked in the United Kingdom and in France, as the side effects of the drug meant that there were renewed arguments against its use in both countries. However, it is quite apparent that politics and patriotism also played a role. In Britain, Marshall argued that Salvarsan “is not essential in the treatment of syphilis” and that “the labour and ingenuity expended on its manufacture would be better applied in the production of high explosives or poisonous gases, or any other means to rid us of German culture”⁴. In France, Gaucher expected that French physicians would no longer use Salvarsan. Ehrlich is dead, he said, and it is to be hoped that his drug dies with him. Dead dogs don’t bite, or in Gaucher’s precise words “Morte la bête, mort le venin”⁵.

It is common today to find reports of scientific discoveries in the lay press and this was indeed also the case when the therapeutic efficacy of Salvarsan was announced. To mention only one newspaper -*The New York Times* -- no fewer than 10 reports and notes were published in 1910 alone and the number expands to a total of 51 prior to the discovery of the ultimate conqueror of syphilis - penicillin.

Thus, the early days of a drug are not always easy, irrespective of its usefulness. Salvarsan turned out to be one of the most important drugs of the 20th century, but various factors meant that it was not viewed as such by everyone when it was first made available to patients and physicians.

REFERENCES

- ¹ Ehrlich P. Congress für Innere Medizin, 1910. Wiesbaden.
- ² Meltzer SJ The present status of therapeutics and the significance of Salvarsan. *JAMA*. 1911; 23: 1907-13.
- ³ Cabot H. Clinical observations on the use of Salvarsan, with special reference to its administration. *Boston Med Surg J*. 1911; 165: 510-13.
- ⁴ Marshall CF. British and French Salvarsan products. *Br Med J*. 1915; 2: 75-6.
- ⁵ Gaucher E. La thérapeutique commerciale des allemands. In: Petit G, Leudet M eds. *Les allemands et la science 1915*. Reprinted by Ayer Company Publishers, Manchester; 2001. p.153-166.

¹ Esteve Foundation, Barcelona, Spain. ² Department of Experimental and Health Sciences, Universitat Pompeu Fabra, Barcelona (Catalonia, Spain).

Corresponding author: Félix Bosch. Esteve Foundation, Llobet i Vall-Llosera 2, E-08032 Barcelona, Catalonia, Spain. Phone +34 934335320; Fax +34 934504899. E-mail: fbosch@estev.org