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## PLANTS IN CARDIOLOGY



*Cinchona ledgeriana* Moens ex Trimen. Bentley R, Trimen H. *Medicinal plants*. Vol 2. London: Churchill, 1880:141.

### Quinine and quinidine

The bark of the South American tree *Cinchona* (Rubiaceae) contains quinine, and also quinidine—isolated by Pasteur in 1853. Its use in treating fevers was learnt in Peru by Spanish missionaries who in 1630 brought the bark to Europe where its value in malaria was discovered. In 1749 Jean-Baptiste de Sénac wrote “Long and rebellious palpitations have ceded to this febrifuge”. In the nineteenth century quinine was used to augment digitalis therapy, and quinidine was described as “das opium des herzens”. But the definitive use of quinidine in arrhythmias came about only because of an astute observation in 1912 by a patient of Professor Karel F Wenckebach who then

related the story in the *Journal of the American Medical Association* (1923;81:472-4). The patient was a man with attacks of atrial fibrillation who said that “being a Dutch merchant used to good order in his affairs he would like to have good order in his heart business also and asked why there were heart specialists if they could not abolish this very disagreeable phenomenon . . . he knew himself how to get rid of his attacks and as I did not believe him he promised to come back next morning with a regular pulse, and he did”.

The man had found by chance that when he took one gram of quinine during an attack it reliably halted it in 25 minutes: otherwise it would last for 2-14 days. Quinine was used then not only in malaria but also as a non-specific remedy for minor ailments as aspirin is today. Wenckebach often tried quinine again but he succeeded in only one other patient. However, it led W Frey in Berlin to study all four cinchona alkaloids in atrial fibrillation and in 1918 he showed that quinidine was the most effective. In 1920 Thomas Lewis put forward his famous hypothesis of circus movement and proposed that quinidine restored normal rhythm by closing the gap between the crest and wake of the circus wave.

The family Rubiaceae is huge with over 10 000 species worldwide. Emetine comes from ipecacuanha and caffeine from coffee but there are no other medicinal species. One genus has the splendid name of *Captaincookia*. Quinine and quinidine are still obtained naturally, from the species *Cinchona ledgeriana* grown commercially in the tropics.

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