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PHARMACY *a long and proud history*

THE WATER PROBLEM?

Historically there are many examples of various herbs, fruits and vegetables being used as *natural diuretics* and today health shops have a wide range of products that purport to be effective diuretics helping to cleanse the body and flush out toxins etc.

In the 16th Century **Paracelsus** recommended among other things that various minerals such as mercury and arsenic and their inorganic compounds could be used to treat disease – in particular syphilis. He noted that mercury chloride (*calomel*) had diuretic properties when it was used to treat syphilis but it was highly toxic.

We now move through time to the German laboratory of *Paul Ehrlich* the father of **chemotherapy**. Ehrlich laid the foundation for a systematic research process for medicine discoveries and introduced the concept of 'magic bullets' against infectious disease. It was in his laboratory in 1908, that *Sahachiro Hata* discovered the anti-syphilitic activity of the 606th compound synthesized by Ehrlich (an organic arsenical compound) called **Salvarsan**. This was a great improvement over the mercurial anti-syphilitic agents and opened the door to the age of **chemotherapy**.

Organic mercurial compounds found in the mid 20th century such as Mersalyl acid increased urine output and were used as rudimentary diuretics, but they had toxic side effects. This prompted Pharmaceutical companies to research for diuretic chemicals that were more effective and less toxic.

Sulphonamides such as *sulphanilamide* were discovered in the 1930s for the treatment of bacterial infection. But in 1949 *Dr William Schwartz* had a patient with heart failure who was not responding to mercurial diuretics. He gave the patient *sulphanilamide* and suddenly urine output increased. The *sulphanilamide* worked, but had variable effectiveness – and prolonged use caused serious side effects.

Research into derivatives of *sulphanilamide* produced *acetazolamide* (**Diamox**) which was only moderately effective as a diuretic but was non-toxic.

What a great opportunity for Big Pharma! The race was on. Scientists at Merck Sharp and Dohme led by *Karl H Beyer* realised that if they could find a related compound that was non-toxic and more effectively increased urine output (thus decreasing blood volume) maybe it would be the magic cure for high blood pressure. Perseverance, faith, and intelligence paid off. **Chlorthiazide** (a *thiazide*) – the first safe, effective diuretic – was discovered and marketed in 1957 as **Diuril** by MSD. **It lowered blood pressure and the side effects were minimal.**

Diuril was hugely successful for patients and MSD, making sales of \$20 million in the first year. Scientists at CIBA produced a second-generation *thiazide* called *hydrochlorthiazide*. The rest is history – with more opportunities for improved health through improved pharmaceuticals all driven by commercial realities.

A HISTORY OF DRUGS – Lydia Mez-Mangold



The Citadel of Drugs.
Depicting the development of drug production from the mediaeval pharmacy up to the modern pharmaceutical industry.
Painting by Franco Asseto. Dated 1955.