

## **Treatment with arsenic trioxide for acute promyelocytic leukemia**

Masaya Tajima

(Clinical Development Dept. New Product Development Division. NIPPON SHINYAKU CO.,LTD.)

Arsenic has been considered to be a poison for long time. Medicinal use of arsenic dates back more than 2400 years to ancient Greece and Rome. Hippocrates administered arsenic compounds as an ulcer remedy. In 18<sup>th</sup> century, Thomas Fowler, the England physician, developed a solution of arsenic trioxide in potassium bicarbonate. Fowler's solution was used for the treatment of a variety of diseases. At the beginning of 20<sup>th</sup> century, Paul Ehrlich, the German physician and Nobel laureate, and Sahachiro Hata, the Japanese Physician, developed an organic arsenical, salvarsan. Salvarsan was the standard therapy for syphilis before it was replaced by penicillin. In traditional Chinese medicine, arsenic compounds is known as mineral herbal medicine with the anticancer action. It has also been used against some other disease such as ulcer, syphilis and rheumatosis. In the 1990s, investigators from China reported that Ailing-1, a solution of crude arsenic trioxide and herbal extracts, showed high efficacy in patients with acute promyelocytic leukemia(APL). APL is a distinctive type of acute myelocytic leukemia characterized by chromosome translocations t(15;17). The differentiation therapy with All-trans retinoic acid(ATRA), Vitamin A derivatives, induces high complete remission rates in patients with APL. However relapsed or refractory patients after ATRA treatment are often resistant to further ATRA treatment and have only a limited option for therapy. Currently, arsenic trioxide is the first choice drug for relapsed or refractory APL and received a regulatory approval in Japan in October, 2004. In this symposium, I would like to introduce the pharmacological properties and the clinical efficacy and safety of arsenic trioxide for APL