〈シンポジウム："General Toxicology"〉

生殖試験(催奇形性試験と多世代試験)の評価

谷村　孝*

Evaluation of Reproduction Tests (Teratogenicity and Multigeneration Test)

Takashi TANIMURA*

Abstract

Congenital anomalies induced by chemical agents have been one of the most important topics in medicine since the thalidomide tragedy in 1961. As a consequence of this episode the reproduction test has been officially required to evaluate the safty of chemicals. It is one of the special toxicity studies, which is to verify the effects of environmental agents by using mammals on the fertility of the parent generation as well as the degree of irreversible or continuous damage on the development of the next (and further) generation(s) and finally to extrapolate the data to humans. It is also called developmental toxicity study. The tests are divided into two classes: teratogenicity study and multigeneration study. With respect to pharmaceutical drugs, the three segment study, an expanded and modified method of the teratogenicity test, has been required. As for environmental chemicals such as food additives, the multigeneration study and teratogenicity study in the period of organogenesis (segment II study for pharmaceutical drugs) are generally performed. Cosmetics are directly and purposedly applied to human skin and mucosa. Therefore, it is officially requested for them to be tested according to the principles of the reproduction tests for pharmaceutical drugs, although only a few cosmetics have been tested so far. In addition, since they are mostly used by men and women of the reproductive age for a long period of life, multigeneration studies are also often recommended.

This review briefly discusses how to perform the reproduction tests with special reference to selection of animal species, route of administration, doses, period of treatment, and method of examination. For evaluation of the data, it is to be emphasized that the scrunity of scientific trouth of the experiment for that species used, pharmacodynamic studies on maternal-fetal exchange of the chemical and detailed studies on mechanisms involved are important steps. General principles of extrapolation of the data to humans are also given.

Finally, some components of cosmetics which should be more carefully evaluated for developmental toxicity are illustrated. They include antiseptics, hair dyes, colors, surface active substances and fragrance materials.