

항암관련 이산화티타늄 연구발표

A Study on Titanium dioxide Related to Anti-Cancer

1. September 14, 2005, Yotohama City University and Japan's TOTO Company Joint Research Presentation.

It is noteworthy that the most precise medical study of the anti-cancer effects of titanium oxide clearly identified the reasons for the controversial claims about the safety of titanium oxide. The points of the study are as follows.

- a. To develop a new cancer treatment by using photocatalysts of titanium oxide, studies began in 1991 by several scientists(Yoshinobu Kuboda, professor of medicine at Yotohama Municipal University, Akira Fujijima, professor of Tokyo University.) to use the decomposition of photocatalysts to suppress tumor growth.
- b. In vivo administration was practically impossible with injections because the photocatalysts of the powdered body are at risk of cohesion in the body causing vascular occlusion. Therefore, research was conducted to ensure safe use of photocatalysts in vivo.
- c. Since titanium oxide is concentrated with static electricity on the particulate surface, it is coated with a polymer to prevent this from happening, allowing the same negative charge to be retained so that it does not condense.
- d. This titanium oxide particles were injected intravenously into mice to confirm non-toxicity to life. According to the results of the experiment, 1.2L(similar to the capacity of a large beer bottle) of titanium oxide particulate solution in a person weighing 60kg are harmless to the living body even if injected intravenously.
- e. After injecting this titanium oxide into a living body, we demonstrated the effect of suppressing cancer cell proliferation by taking ultraviolet rays and measuring tumor volume.

(After all, the possibility that titanium oxide may be dangerous in vivo is caused by static electricity between particles of titanium oxide. In the above experiment, particles were dispersed using polymer macromolecule as (d), and our technology was produced by dispersing them using PH. It is a technology that utilizes characteristics distributed from PH3 to 3.5. To use titanium oxide for surface coating, it is essential to make sure that it does not condense.)

2. February 27, 2006, IARC, Changing the Group of Titanium oxide

The carcinogenic risk of titanium oxide was adjusted from group 3 to group 2B.

Group1 - carcinogenic risk

Group2A- carcinogenic risk high

Group2B - carcinogenic risk low

Group3 – No carcinogenic risk

(As described in the above experiment (1), Because of titanium oxide itself has cohesion and is potentially dangerous in vivo. But even the claim of a low possibility was counterargued by study number (3), published in 2008, that there was an anticancer reaction. **And Japan's Labor Safety and Sanitation Act (5), which was enacted based on recent research results, ruled that**

there is no evidence of carcinogenicity. In particular, the most authoritative study of (1) proved to be an anticancer drug.)

3. 2008, Yokohama City University Advanced Science Research Center, Author: Professor Kubota

It has been demonstrated that titanium oxide produces active oxygen that contributes to anticancer action by photocatalyzing when it receives UV light, and thus produces anticancer effect by strong oxidation reaction. As a result of injecting high-dispersive titanium oxide nanoparticles by coated surface into mice, it was confirmed that titanium oxide was concentrated in the cancer site and that the anticancer effect in the concentrated area was confirmed by ultrasonic waves.

4. 2009, Photocatalysts of titanium oxide produced by sputtering method (Author: Park Jang-sik)

Titanium dioxide photocatalysts are completely harmless to the human body and can be applied to diet, such as bowls and ceramics. In addition, as a new environment-friendly sterilizer, it has the effect of antibacterial sterilization such as hospital, nursing facilities for the elderly, interior wall products such as stores and offices, and air conditioners.

5. 2009, 191GHS No. 9 of the Enforcement Decree of the Labor Safety and Sanitation Act in Japan , ID740

titanium oxide

:There is no evidence of carcinogenic risk.

: There is no evidence of toxic inhalation in gas or dust.

: It is irritating to the eye. (2B Grade)

: There is no evidence of toxicity to genital organs.

: There is no health problem even if inhaled temporarily through breathing. third grade

: If inhaled continuously by breathing, there is a lung obstruction.