The Modifying Effect of Indole-3-Carbinol (I3C) in rat mammary carcinogenesis

Jin Seok Kang*, Ki Taek Nam, Byeongwoo Ahn, Mi Na Choi, Ki Sok Kim, Dong Deuk Jang and Dae Joong Kim

Department of Pathology, National Institute of Toxicology Research, Korea Food and Drug Administration, Seoul 122-704

The consumption of cruciferous vegetables such as cabbage and broccoli have been shown to have a chemopreventive effect in human and in experimental animals. Indole-3-carbinol (I3C), one component of cruciferous vegetables, has been shown to exert its chemopreventive effect in liver, colon and mammary tissue before or concurrent exposure of carcinogen, but in some reports, there have been several evidence that consumption of I3C after carcinogen treatment induced tumor promotion in some tissues. There have been no reports about the effect of I3C after carcinogen exposure in N-Nitroso-N-methylurea (MNU)-induced mammary tumor model of rats.

Our studies were investigated to examine the modifying effects of I3C, a constituent of cruciferous vegetables (the Family of *Cruciferae*) in the rat MNU-induced mammary tumor model. Ninety-six 4 week old female Sprague-Dawley rats were randomly divided into the 5 group. The animals of group 1 - 3 were intraperitoneal injected with MNU at the age of 50 day old. The animals of group 4 and 5 were injected with saline as vehicle at the same time. Animals of groups 1 3 were given diet containing 100ppm and 300ppm I3C from week 1 until week 25 after MNU treatment. The animals of group 4 were given diet containing 300ppm I3C without MNU treatment. All animals were killed at week 25.

The incidences of the mammary tumor in the I3C treatment groups were slightly higher than those of group 3 (MNU alone). The multiplicities of the mammary tumor in the group 2 (MNU+I3C 300 ppm) showed tendencies for increase but these values were not significant. Average number of tumor in the tumor bearing rats of the group 2 (MNU+I3C 300 ppm) was higher than those of group 3 (MNU alone). These results suggest that exposure of I3C after carcinogen treatment may have a potential promotional tendency for mammary cancer by the proliferation of mammary gland at the time of high risk.