

A-4 Studies on Human Health Effects by increased Ultraviolet Ray
(Final Report)

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Representative biological effects of ultraviolet ray on human health are skin cancer, cataract and immune suppression. Prevalence and incidence rates of these diseases are surveyed by mass-screening method. In vitro and animal experiments to clarify the mechanism of damages caused by exposure of ultraviolet ray were also elaborated. Continuous field survey is necessary to measure the true risk of UV exposure in Japan. International collaboration is also important because the increasing UV exposure is the global issue.

The following programs were studied;

- (1) Prevalence of skin lesions were surveyed in Akita, Nagano, Hyogo and Okinawa prefecture. Genetic changes of the biopsy materials were examined, and p53 alteration was found in precancerous solar keratosis. Continuous mass-screening in the same area make it possible to calculate the incidence rate.
- (2) Similar genetic change was confirmed by the experimental exposure of UVB to mice. Changes of metallothionein and other intracellular proteins as early events were studied. Labelling by ³⁵S was useful for analysing early induced protein.
- (3) Activation of Epstein-Barr virus was induced by UVB exposure in mouse. Enhancement of some B-cell mediated antibody production was observed. Further mechanism is under study.
- (4) Mass screening for eyes in Okinawa, Hokkaido and Kanazawa clarified the prevalence rate of cataract in these area. Superficial type cataract increased by age in all three area, but nuclear cataract was common in Okinawa. Organ culture of cataract was provided for experimental study, and degeneration of crystallin was detected by monoclonal antibody.

International collaboration developed through IARC, WHO, etc.