90. On Malignolipin. XVIII

*The Change in the Distribution of Malignolipin in Mice after the Cutaneous Application of 20-Methyl-Cholanthrene**

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It had already been demonstrated with various methods in human subjects as well as in experimental animals that malignolipin is specific to malignant tumors,^{1)–6)} and also that it can be found in the blood of patients bearing cancer in its very early stage of development.³⁾ Then a question might arise as to when, where, and how malignolipin would begin to appear in the course of the development of cancer. To get an answer for this question, the change in the distribution of malignolipin in mice during the experimental carcinogenesis after the cutaneous application of 20-methyl-cholanthrene was observed.

Each 0.04 ml of a 0.25 g/dl benzene solution of 20-methyl-cholanthrene was applied three times a week to the skin of ddS strain, male mice, and the application was completed after 20 times. One, two, three, four, five, six, eight, thirteen, or twenty-one weeks after the completion of the application, a certain group of mice were bled to death, and the amount of malignolipin contained in their blood, affected skin, liver, kidneys, spleen, and testicles was determined by the picrate method.²⁾ At the same time, their skin as well as the other tissues were examined histologically in the usual way.

The results are as shown in the figure. In the blood or the examined tissues of untreated control mice, or in those of thus treated mice examined at the end of one week after the completion of the application, no trace of malignolipin could be detected. At the end of 5 weeks after the completion of the application, when the skin just begins to show cancerous changes, malignolipin began to be found in the skin of the treated mice. Though there are some individual variations concerned with the development of

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cancer, malignolipin was not detected in the skin of every case where no cancerous changes could be found, yet it could be found in the skin of all cases where cancerous changes could be ascertained.

In the liver and kidneys malignolipin was found to begin to appear at the end of two weeks after the completion of the application, in the blood at the end of 4 weeks, in the spleen at the end of 5 weeks, and in the testicles at the end of 6 weeks.

Malignolipin content after the cutaneous application of 20-methyl-cholanthrene. ddS strain, male mice.

0.04 ml of 0.25 g/dl benzene solution of 20-methyl-cholanthrene given. 3 times a week, and given a total of 20 times.

The fact, that malignolipin begins to appear in such particular tissues as the liver or the kidneys, which both play important metabolic rôles in the body, 3 weeks earlier than it appears in the skin or the other tissues examined, lets us conclude, that some metabolic and systemic changes being specific to cancer are in progress even before the development of cancer. And to this systemic process malignolipin appears to be intimately concerned, thus indicating it is not of negligible significance.

The appearance of malignolipin in the blood earlier than the confirmation of cancerous changes in the local site of the skin seems to demonstrate the early-diagnostic validity of the detection of malignolipin in the blood.

In short, the result seems not only to endorse the cancer specificity as well as the early-diagnostic usefulness of malignolipin, but also to suggest a certain pathophysiological significance of malignolipin during the development of malignancy.

References

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