Comparison of Antitumor Substances against Cell of Yoshida's Ascites Tumor in Rat

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We are studying the anti-tumor substances from streptomyces. We obtained already five new anti-tumor substances by our screening method, Luteomycin, Carzinophilin, Mitomycin A, B, and C and Melanomycin.

In this experiment, one-fifth to one-tenth amount of the tolerable dose of the antibiotics was injected into the peritoneal cavity of rats, inoculated with the cell of Yoshida sarcoma (ten million tumor cells) and the morphological change upon the tumor cells was recorded. The influence upon the tumor cells and the leucocytes was checked along with the lapse of time and compared.

The results are summarized as follows: (Sarkomycin was employed for control)

1. The effects of these antibiotics were noticed upon nucleus as well as upon protoplasm.
2. The derangement of the nucleus was found both in the dividing and resting stages.

[GANN, Vol. 47, 1956]
3. The destructive action began immediately after the injection in case of Melanomycin and Sarkomycin, or a few hours later in case of Luteomycin, Carzinophilin and Mitomycin.

The changes proceed through such phenomena as faint staining and swelling of cytoplasma and nucleus, which was followed by the discharge and desruption of the nucleus. The morphological changes of nucleus may be classified into two groups; one involves swelling and lysis of the nucleus, and the other disruption, rounding and segmentation.

4. The above changes began at one to two hours after injection and continued to 6 to 12 hours or prolonged further in case of Carzinophilin.

5. The destructive action remained partial or covered most of the tumor cells. But remaining tumor cells, not having received the effect, appeared and began cell division again. Thus the appearance of the ascites fluid became the same as before the treatment.

6. The decrease of the tumor cells was related with the increasing of normal cells: with Carzinophilin, Mitomycin, and Luteomycin, polymorphonuclear neutrophiles appear first, accompanied by the monocytes. Melanomycin brought about a remarkable increase of neutrophiles. The action of Sarkomycin was characterized by the increment of monocytes and eosinophiles.

7. After the injection, the ascitic fluid increased remarkably in the case of Melanomycin and Sarcomycin and not increased in the case of Luteomycin, Carzinophilin and Mitomycin.

8. From the above observations, the mode of action of these antibiotics was classified morphologically as follows:

1. Luteomycin: Acting mainly upon the nucleus.
2. Carzinophilin & Mitomycin: Disruption, rounding and segmentation of nucleus and cytoplasma.

アクラノマイシンによる細網肉腫（症）治療の研究

芝 茂

Studies on Therapy of Reticulosarcoma (-tosis) with Actinomycin
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Reticulosarcoma (-tosis) is found more frequently in our country than as is generally supposed. Judging from the mode of its spreading, for example, the