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NEW IMMUNO-STIMULATING ANTI-CANCER PREPARATION "UKRAIN"

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It was the researcher's goal to develop a preparation for treating malignant neoplasms that would be non-toxic and effective only against tumor cells. The therapeutic properties of a yellow milk of Chelidonium majus L. (greater celandine) in the treatment of skin cancer were known from folk medicine (1,2,3,4). A non-toxic semi-synthetic preparation (alkaloid thiophosphoric acid triaziridide derivative) was developed based on greater celandine that has shown itself to be of therapeutic value for alleviating pain as well as inducing partial tumor remission - with healing of exulcerations in patients with various malignant neoplasms in very advanced stages of the disease (5).

Since, in the case of skin cancer, healing took place only at the skin surface, it was assumed that a means could be found to increase the tendency of the alkaloids in celandine to accumulate in the tumor tissue. The alkaloids were mixed with compounds which, due to their elemental composition, had an affinity for tumor cells. It was assumed that a greater amount of energy was needed by degenerating cells due to their rapid and irregular division. Moreover, it is known that phosphorus plays a very important role in energy transfer in the organism. For these reasons, the alkaloids of Chelidonium majus L. were caused to react with the phosphorus-bearing compound thiophosphoric acid triaziridide (available under the trade name Thio-TEPA). Through the complexing of phosphorus with the alkaloids, it was possible to increase their affinity for malignant cells.

A preparation (UKRAIN) was developed on this basis. Subsequently, a number of studies were conducted on UKRAIN to elucidate the effect mechanism and to determine its toxicity. A summary of the results obtained to date follows.

The toxicity level (LD_{90}) for mice and rats lies in the region of 500 mg/kg body weight (b.wt.). The therapeutic dose ranges from 2.5 mg to 25 mg per injection (0.035-0.35 mg/kg b.wt.) every 48-72 hours, which is lower by a factor of 10,000 than the toxic dose.

UKRAIN's effectiveness in vitro was demonstrated in lymphocyte transformation and oxygen consumption tests. In the lymphocyte transformation test, UKRAIN was shown to be a substantially more effective and specific stimulator than PHA (phytohaemaglutinin) in the control group. The number of transformed lymphocytes (lymphoblasts) in the tissue sample treated with UKRAIN was significantly higher than that in the control group. The conclusion can be drawn that UKRAIN is immunologically effective and stimulates the human defence

mechanism. In the oxygen consumption test, healthy and malignant cells were studied in the presence of UKRAIN. With both cell types, oxygen consumption increased for some 15 minutes and subsequently normalized in healthy cells. In malignant cells, however, it did not return to normal but dropped to zero; in fact, the malignant cells stopped "breathing" and died. This specific pharmacological effect had never before been reported in any literature and with any known substance.

In vivo, UKRAIN, while not having any noticeable effect on artificially induced tumors, was shown to be effective in the treatment of spontaneous tumors in dogs.

The preparation is self-fluorescent under UV light. This effect was studied in healthy and malignant tissue, with live animals and in vitro. It has also been documented photographically. This property will have to be investigated further for potential diagnostic applications.

Studies on animals conducted at the National Cancer Institute (NCI), Bethesda, Maryland, USA, and at the Institute for Cancer and Immunogenetics (ICIG), Villejuif, France, indicated that UKRAIN was non-toxic.

To date, UKRAIN has been used largely in treating terminal cases, where complete recovery, even in the best of circumstances, could hardly be expected. In the more than 100 patients treated, the effectiveness spectrum of UKRAIN ranges from no effect to the arrest of tumor growth and to partial and complete remission. It has been observed in this connection that effectiveness does not depend so much on the histology of the tumor as on the age of the patient, the state of the immune system, the mass of the tumor and the time of treatment.

Several clinical case studies are summarized below (female patients with mamma carcinoma; patients with malignant melanoma; one patient with basocellular epithelioma; one patient with recurrence of a cylinder cell carcinama of the parotis; and two patients with alleged mamma carcinoma where the primary tumor could not be located). A clear remission of the tumor tissue was shown in all cases, whereby the tumor tissue reformed partially in reverse sequence to its origin - that is to say, those metastases which appeared last were the first to disappear. No necrosis occurred, but subsequently a clear demarcation of the tumor tissue appeared against the surrounding area with retrogression of the local swelling and eventually also of the existing lympn oedema witgh nindrance of drainage. Then, the tumor nodes slowly became smaller. A clear effect in the form of subjective sensations was felt by these patients immediately after the first injection, including (i) subsidence of pain, in one case occurring 1-2 hours after the injection, (ii) feeling of warmth in the tumor, which with one patient was determined as local warming, (iii) tension and irritation in the

tumor area, heat sensation, tachycardia, slight vertigo and headache, (iv) increased urine precipitation, and (v) fatigue, depression, nausea and partial depression. These symptoms did not occur at the same time, but with all patients some of the symptoms occurred in individual rhythm after each injection.

As expected, none of the side-effects associated with cytostatic drugs - such as bone marrow depression and hair loss - has been manifested in the patients treated with UKRAIN, since the drug has no alkylating effect on the cell.

The fact that UKRAIN is not effective against artificially induced tumors does not mean that it is ineffective against cancer. Animals used in such research are bred in entirely unnatural conditions and exhibit immune system deficiency. Their defence mechanisms cannot be compared to those of humans and animals in which spontaneous tumors develop over many years.

In view of the fact that UKRAIN is effective against spontaneous tumours, one can conclude that UKRAIN's effect mechanism is not based on the supression principle - that is, on a response independent of the patient's defence mechanism - but most likely on the induction principle, whereby the patient's own immune system is stimulated.

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