

## DETOXIFICATION ADJUVANT IN THE NUTRITIONAL THERAPY OF CANCER IN DOGS AND CATS

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### Abstract

*The medical saying states " it is easier to prevent than to cure " thus there are many ways to prevent and the easiest way is with proper nutrition which can prevent , delay or even stop the development of cancers in humans and animals . Reducing risk factors with a balanced diet ( without pesticides and artificial preservatives ) , drinking clean water , adequate amounts of antioxidant supplementation with vitamins and minerals and regular physical activity can prevent cancer.*

*Protein malnutrition is usually associated with neoplastic disease , represented by what is called neoplastic cachexia which is the result of cumulating a deficiency in terms of the amount of protein and calories associated with metabolic effects induced by cancer. The cytostatic disease is a complex of pathological syndromes induced by chemotherapy medication that affects the whole body without discrimination. The whole complex of symptoms that appear due to chemotherapy was called „The cytostatic disease" by analogy with the disease caused by irradiation. Cachexia as paraneoplastic syndrome overlaps metabolic and immunological effects induced by chemotherapy, the detoxification and rebuilding of the cancerous body becoming a vital goal. Administration of both conventional detox agents and unconventional therapeutic products tested on dogs and cats with various forms of cancer such as PI Water ( ionized and structured ) and deuterium depleted water or DDW.*

*Proper nutrition and balanced protein - carbohydrate - lipid is able to prevent tumor growth but also to improve the quality and duration of life for both human and animal patients with cancer.*

*Key words: WWD, PI water, syndromes , paraneoplastic , cachexia.*

### INTRODUCTION

At a time when food is increasingly artificialized and genetically modified, cancer prevention and therapy for humans and animals through specific diets is a very important goal. Studying cancer in pets has been and will continue to be an experimental model in treating cancer in humans.

Nutritional therapy is a key component in cancer cachexia treatment, effectively helping to control malignant diseases in certain situations. Nutrients can be used as a means of adjuvant therapy in reducing the cytotoxicity associated with chemotherapy and radiotherapy and of great importance in speeding post-op healing and coping with paraneoplastic syndromes associated with advanced stages of cancer. The timing and nature of nutritional intervention should be set to start long before the patient shows signs of cancer cachexia, that being debilitating weight loss or anorexia, the aim of adjuvant therapy

being improving the response to therapy and the quality of life.

### MATERIALS AND METHOD

Experiments were conducted in the Oncology Clinic of the Faculty of Veterinary Medicine Bucharest and a private veterinary medical practice.

We followed 12 cases of dogs and 12 cases of cats with various forms of cancer and in advanced stages of cancerous cachexia. Animals benefited from both classical and unconventional therapy with PI water or DDW. Solid tumors were surgically excised after appropriate therapy.

Pi water or in Greek language life water, has an alkaline, ionized structure and was given to groups II A and II B throughout the period of the patients survival.

Deuterium depleted water (D<sub>2</sub>O DDW) is a non-radioactive, low deuterium (hydrogen isotope D<sub>2</sub>) that slows cellular metabolic

processes by substitution of the physiological water H<sub>2</sub>O, the maximum percentage being 30% in order not to cause harmful effects on the body both healthy and affected by the cancer disease, radiation or chemotherapy.

- Batch IA consisting of 4 dogs, 2 mammary tumors in different TNM stages and 2 malignant lymphomas. The dogs received chemotherapy with alkylating agents - Holoxan 200 mg/m<sup>2</sup>/day and Carboplatin 1 mg/kg 14 days before and after surgical interventions. At the same time the diet therapy and deuterium depleted water DDW was administered throughout survival.

- Batch IB consisting of 4 cats, 2 mammary tumors in different TNM stages and two cats with lymphoma which received chemotherapy with alkylating agents (Ciclofosfamida 50 mg/m<sup>2</sup>/day) and anthracycline (Epidoxorubicina 1 mg/kg 14 days before and after surgical interventions) diet therapy and deuterium depleted water DDW was administered. The DDW doses used were 30 ppm / kg. cats per day and 60 ppm / kg for dogs.

- Batch IIA consisting of 4 dogs, 2 females with mammary tumors in different TNM stages and 2 male dogs with lymphoma which received chemotherapy with alkylating agents - Holoxan 200 mg/m<sup>2</sup> / day and Carboplatin 1 mg/kg 14 days before and after surgical interventions. At the same time the diet therapy and PI water was administered throughout survival.

- Batch IIB consisting of 4 cats with lymphoma, received anthracycline chemotherapy (Epidoxorubicina 1 mg/kg before and after surgical interventions. At the same time the diet therapy and PI water was administered throughout survival.

- Batch III A consists of 4 dogs, 2 females with mammary tumors in different TNM stages and 2 males with malignant lymphomas which received the same cytostatic therapy as batches IA and IIA and ordinary water (H<sub>2</sub>O).

- Batch III B 4 cats, 2 mammary tumors and 2 lymphomas received ordinary water (H<sub>2</sub>O) along with conventional chemotherapy in groups IB and IIB.

Animals in all groups received specific treatments in parallel (chemotherapy and surgical therapy) and adjuvant diet therapy

(diet food and water). Pi water and the deuterium depleted D<sub>2</sub>O- were administered throughout the survival of patients in groups IA/B and IIA/B.

Confirmation of the diagnosis on protein energy malnutrition existence in cats and dogs with neoplastic cachexia was by clinical assessment of the metabolic nutrition. We systematically evaluated the amount of protein and energy of the patient, including body condition score, routine haematological and biochemical analysis and the data obtained from the diet history.

## RESULTS AND DISCUSSIONS

The therapy using PI Water and D<sub>2</sub>O deuterium depleted water in the diet of animals with cancer was doubled with a balanced diet and adequate clinical staging of the disease but also the cancerous body's biological needs. Favorable therapeutic effects were expressed differently depending on the type of cancer, clinical stage and type of water administered. The role of this therapy is water substitution, having detoxifying effects on animals with cancer and reducing the toxic side effects of chemotherapy.

Test results showed that deuterium depleted water had the most important therapeutic effects in the I<sup>st</sup> batch, with both dog and cat patients with cancer, whether it was associated with low carbohydrates diets, moderate amounts of highly bioavailable protein, soluble and insoluble fibers and a moderate amount of polyunsaturated fatty acids of the omega-3 series.

Weight loss in cancer patients in the II<sup>nd</sup> batch, both dogs and cats, treated with chemotherapy and PI Water was more common, especially in individuals with advanced stage disease. Cachexia degree is an important prognostic indicator, because of the lack of assimilation and also because the actual development of cancer or complications caused by anticancer therapy. Affected patients suffer from a progressive depletion of both muscle and lipid deposits caused by abnormalities in the metabolism of carbohydrates, protein and fat. The rapid proliferation of neoplastic tissues leads to an increased demand of amino acids and energy

in the tumor cells. Patients with weight loss will live less than those without weight loss, regardless of their oncological diagnosis. The incidence of weight loss is variable, depending on the type of tumor. Neuroendocrine response (excess glucocorticoid hormones) induced by mental stress and malignant diseases caused increased protein catabolism and body energy storage.

A hereditary requirement in cats with cancer for unusually high protein may predispose animals to protein-energy malnutrition and can lead to biochemical abnormalities in the blood serum levels. An increase in serum creatinekinase concentration caused by rapid catabolism of skeletal muscles, compensating to provide the necessary amino-acids, appears in cats with mammary tumors that undergo chemotherapy. Protein deficiency may also be a factor in the pathogenesis of hypoalbuminemia that characterizes cats with high serum: liver enzymes ALT, AST and alkaline phosphatase.

Hematologie of the cancerous body shows non-regenerative anemia (anemia of chronic disease) and lymphopenia, which are often present features.

Dogs and cats with cancer from the IIIrd batch treated with chemotherapy and tap water showed biochemical abnormalities that may include decreasing concentrations of blood urea nitrogen secondary to protein decrease, decreased serum creatinine during muscle mass consumption and hypoalbuminemia due to increased protein catabolism and reduced protein synthesis.

## CONCLUSIONS

The deuterium depleted water diet resulted in significant decrease in transaminases ALT, AST and urea compared with groups treated with chemotherapy.

Deuterium depleted water is effective in improving the cancerous body's metabolism and has an adjuvant effect in detoxification

and the restoration of the functions affected by the disease (paraneoplastic syndromes) and conventional therapies (cytostatic disease).

PI Water administered to the patients (dogs and cats with cancer) followed by us has proven to be a modest and inconsistent therapeutic adjuvant.

Ideal diet for a cancer patient must contain a higher amount of protein and fat than carbohydrate, ratio to be determined according to nutritionists.

The amount of proteins and their quality (rich in essential amino acids) must be maintained at a level sufficient to repair tissue, unlike carbohydrates that must be reduced to a minimum, anticancer nutrient may be used in parallel.

The cancer patients diet must consist of high quality food, with a moderate protein content (18-22%), low carbohydrate (3-13%) and an increased intake of fat (55-60%).

Diets rich in essential fats help cancer patients counteract the effects of cancer and even reduce cancer expansion.

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