PREVENTA

Information Booklet

All about deuterium depletion

Dear Reader,

our aim with creating Preventa Information Booklet was to provide you with the most important information on deuterium and deuterium depletion in a short and generally intelligible way. The leaflet informs you on the procedure based on deuterium depletion, and on the possible ways and importance of its application in maintaining health.

The editors of Preventa Information Booklet hope that this leaflet will please you and give useful information!

BASICS ON DEUTERIUM AND THE PREVENTA PRODUCT FAMILY

Deuterium, a.k.a. **heavy hydrogen,** is a naturally occurring stable – non-radioactive – variation of hydrogen. The atomic nucleus of hydrogen consists of one proton only, but the deuterium nucleus contains one proton and one neutron. This considerable, twofold mass difference causes significant differences in the physical and chemical properties of hydrogen and deuterium. **Preventa, the world's first drinking water product family with lowered deuterium content,** was developed on the basis of an international patent by HYD LLC for Cancer Research and Drug Development. Preventa drinking water was licensed by the Budapest Veterinary Health and Food Control Station in 1999, based on expert opinion of Fodor József National Centre of Public Health, Institute of Environmental Health, and National Institute for Food and Nutrition Science.

THE SPECIALITY OF DEUTERIUM-DEPLETED WATERS – DETERMINATION OF DEUTERIUM CONTENT

The deuterium content of deuterium-depleted drinking waters is by far lower than the natural value, and the degree of depletion is higher than the natural variation of deuterium level. The deuterium content of water is normally given in ppm (parts per million) units, which **shows,** how many in one million hydrogen (H) atoms are deuterium (D), or **how many in one million water (H_2O) molecules are heavy water (D_2O).** Deuterium content can be measured by mass spectrometry and laser-based techniques.

GLOBAL VARIATIONS IN THE DEUTERIUM CONTENT OF PRECIPITATION – DEUTERIUM CONTENT OF THE HUMAN BODY

The deuterium content of living organisms is determined primarily by the deuterium level of oceanic water and of precipitation arriving at the ground. Deuterium level in precipitation decreases from the Equator to the North and South Pole, from the oceans into the continents, and in proportion with increasing elevation. In our climatic zone, **deuterium content of the surface waters is 140-150 ppm** with little variability. The human body consists prevailingly of water, but the proportion of water decreases with age. Considering that ca. 60% of our body is water, and that organic compounds also contain deuterium, the concentration of deuterium in the human organism is severalfold higher than the normal level of other physiologically important elements such as calcium, potassium or magnesium.

REASONS OF CONSUMING DEUTERIUM-DEPLETED WATER

Results of the latest research showed that **decreasing the level of deuterium is a natural biochemical process and belongs to the normal cell functions. In healthy cells, this process functions properly, but in cancer cells** the process is damaged and **cannot secure the level of deuterium depletion typical for healthy cells.**

This natural system is the target of the deuterium depleting procedure. **By changing the deuterium level of drinking water below the natural level, the deuterium content in the body can be kept low even if the said natural cell physiological process is faulty.** On consuming deuterium-depleted drinking water, the water of normal deuterium level in the organism's water spaces is mixed with the deuterium-depleted water. By proper choice and continuous consumption, deuterium depletion in the organism can be maintained for long periods.

LOWERING THE DEUTERIUM CONTENT OF THE BODY

The easiest way to influence the deuterium content of our body is to decrease the deuterium concentration of drinking water. By consuming drinking water with lower than natural deuterium concentration, deuterium content in our organism will be decreased because **the organism's normal water content will mix with the deuterium-depleted water.**

This can be complemented by other deuterium-depleted foods – e.g., deuterium-depleted mushroom extract – because their organic molecules are also low in deuterium. Supplemental consumption of **plants grown under deuterium-depleted conditions,** or **foods made from the former, can contribute to more efficient lowering of deuterium content in the body.**

THE METHOD OF REDUCING DEUTERIUM LEVEL IN WATER

Deuterium-depleted water is produced by an energy-demanding technology based on differences in the physi-cochemical properties of normal water (H_2O) and heavy water (D_2O). Due to a boiling point difference of merely 1.5°C, the concentration of heavy water (with higher boiling point) is lower in the vapour phase and this fact is utilized for producing deuterium-depleted water. By repeating evaporation several times in so-called **distillation columns,** the deuterium content of water can be reduced to any level.

IS THERE A WAY TO PRODUCE HOME-MADE DEUTERIUM-DEPLETED WATER?

By means of home distillers, not more than 1 ppm decrease can be achieved by single, or 2-3 ppm by double distillation, and this is insignificantly little change in the deuterium concentration of water. **Substantial decrease of deuterium content in water can be achieved only by an industrial scale technology, fractional distillation.** Preventa products contain 15 to 84% less deuterium than our natural waters, whereas home distillers alter the deuterium content of water by a mere 1-1.5%.

THE MEANING OF NUMBERS INDICATED ON DEUTERIUM-DEPLETED PRODUCTS

The numbers indicated in the names of Preventa drinking waters mean the deuterium content of that product in ppm units. Accordingly, Preventa 125 contains 125 ppm, Preventa 105 contains 105 ppm, and Preventa 85 contains 85 ppm deuterium, in contrast to the 140-145 ppm typical for surface waters – and hence, for ordinary tap water – in our geographical zone.

RECOMMENDED DAILY DOSE OF DEUTERIUM-DEPLETED WATER

It is possible to cover the daily water intake (**1.5-2 liters a day** for an adult of average body weight) with deuterium-depleted water, which **can be consumed as such but can also be flavored or used for cooking or making tea or coffee.** It is important that intake of fluid with normal deuterium level (tap water, mineral waters, soft drinks, fruit juices, milk) should be minimized.

WHICH PREVENTA WATER SHOULD ONE CHOOSE?

The lower is the deuterium content of a given Preventa water, the farther it is from that of the natural waters which is 140-145 ppm in our climatic zone. **By proper choice and continuous consumption, deuterium depletion in the organism can be maintained for long periods.**

CARBONATED AND NON-CARBONATED DRINKING WATERS

Mineral waters and drinking **waters are available in carbonated and non-carbonated form.** It is important to know that the **two variations have approximately the same mineral content, therefore there is no significant difference** between them **as regards acid-base balance in the organism.** Added carbon dioxide contributes to the long-term stability of the quality of waters.

AN IMPORTANT ASPECT IN BUYING DEUTERIUM-DEPLETED DRINKING WATER

In case of deuterium-depleted waters it is **important to watch out** if the number or ppm value seen in the name of the product appears also in the detailed table of composition as an exact value; and **to what extent this value differs from the natural 140-145 ppm. The numbers seen in the names of Preventa waters correspond to their actual deuterium content,** and the value is also indicated in the table of composition. The deuterium content of Preventa deuterium-depleted products is being measured and attested in an accredited laboratory.

IN WHAT AREAS HAVE THE EFFECTS OF DEUTERIUM DEPLETION BEEN STUDIED?

Research results of the last 25 years proved the special role of deuterium in the regulation of cell division and cellular metabolism. **By depleting deuterium, the growth of cancer cells can be inhibited** and the metabolic pathways typical for cancer cells, influenced. The latest scientific results and clinical experiences also showed that applying **deuterium depletion is a promising new way in the treatment of metabolic diseases** including diabetes. In a clinical study, deuterium depletion raised the level of HDL, the "good" cholesterol, by 30%. Researchers studied studied the effect of deuterium-depleted water on blood lipids in animal models, and obtained similar results. In other studies, the relationship the relationship between deuterium level and susceptibility to depression was investigated. The results indicated that **lowering deuterium level had an advantageous influence on the susceptibility to depression.** In animal experiments, **deuterium-depleted water had positive effect on long-term memory.**

Anti-aging effect of deuterium depletion has also been published. Beyond all these fields of effect, **further positive physiological effects of deuterium depletion have been revealed in sports health** when the effect of deuterium depleted Preventa water on performance of international-level rowers was investigated. These top athletes were subjected to the usual load tests, and **those in the Preventa-consuming group could meet the requirements with better physiological parameters.**

After lowering deuterium content, **tissue anoxia was reduced, mobilization and utilization of glucose was improved,** and the cells had better metabolic compensation of the effect of physical load. The outcomes of the investigation were in agreement with the athletes' subjective experiences, namely that after consuming Preventa **they performed better, regenerated more rapidly, and had more stamina.** Preventa is thus suitable for increasing the performance of the organism in situations of increased physical burden.

GÁBOR SOMLYAI PhD, INVENTOR OF DEUTERIUM DEPLETION

Gábor Somlyai graduated in biology in 1982 at the József Attila University in Szeged, Hungary. He then worked for eight years at the Institute of Plant Protection of the Hungarian Academy of Sciences. He defended his PhD thesis in molecular biology in 1988. For six months he was DFG fellow at the Georg August University in Göttingen (Germany), then post-doc at the University of Missouri (Columbia, Missouri, USA) in 1988-89 performing molecular genetic studies. In 1990 as senior researcher he started the investigation of the biological role of deuterium, occurring in nature and in living organisms at the National Institute of Oncology. He founded HYD LLC for Cancer Research and Drug Development in 1993. Dr. Somlyai has had numerous publications in English, German and Hungarian, and regular presenter at domestic and international conferences.

PREVENTA

Contact:
HYD LLC for Cancer Research and Drug Development
H-1124 Budapest, Fürj u. 2., Hungary
Phone +36-1-365-1660, e-mail: info@preventa.org, web: www.preventa.hu

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