Hydration

AND ITS IMPORTANCE FOR DAILY **LIFE** AND **HEALTH**

EFBW symposium
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Proceedings

EFBW
EUROPEAN FEDERATION OF BOTTLED WATERS

EFBW SYMPOSIUM

Hydration

AND ITS IMPORTANCE FOR DAILY **LIFE** AND **HEALTH**

12th European Nutrition Conference FENS
20th October 2015 | Berlin | Germany
18.00 - 19.30 | ECC Room 3 (Ground Floor)

CHAIRS:

Dr. Laurent Le Bellego
Chairman of the EFBW Health Group, European Federation of Bottled Waters (EFBW), Brussels, Belgium

Dr. Florence Constant
Vice-Chairman of the EFBW Health Group, European Federation of Bottled Waters (EFBW), Brussels, Belgium

SPEAKERS:

Fluid intake of adults in Europe: are we optimally hydrated?
Dr. Isabelle Guelinckx
Danone Nutricia Research, Palaiseau, France

Impact of mild dehydration in daily life
Dr. Nathalie Pross
Biotrial, Didenheim, France

Drinking Water and kidney diseases
Dr. Ivan Tack
CHU Toulouse, Toulouse, France

Foreword

The science on hydration has experienced significant developments over recent years. New findings relate to drinking behavior knowledge in different countries all over the world, including Europe, as well as the effects of mild dehydration on cognition and mood. The relationship between optimal water intake and the prevention of chronic kidney diseases also appears as an exciting and promising field of research for the future. The symposium 'Hydration and its importance for daily life in health', hosted by the European Federation of Bottled Waters (EFBW) at the 12th European Nutrition Conference FENS, aims at updating the audience on these three fields closely linked to hydration. It will provide evidence that improving hydration and water intake among the European population can significantly contribute to improved nutrition and public health. Participants will learn from experts in the field of hydration, psychology and physiology about the latest research on fluid intake in Europe, the impacts of mild dehydration in everyday life and the potential effects of dehydration on kidney diseases.

Dr. Laurent Le Bellego
Chairman of the EFBW Health Group

Fluid intake of adults in Europe: are we optimally hydrated?

Dr. Isabelle Guelinckx
Danone Nutricia Research, Palaiseau, France

Isabelle Guelinckx, PhD, MSc, RD

Isabelle Guelinckx obtained her MS and PhD in Biomedical Sciences at the Catholic university of Leuven, Belgium.

She specialised into nutrition with a second MS at the University of Maastricht, the Netherlands and a professional bachelor in Dietetics and Nutrition at the Catholic College Leuven, Belgium. This knowledge was put into practice during the clinical research of her doctoral thesis, which aimed to assess the impact of lifestyle advice on gestational weight gain of obese pregnant women.

In 2011 Isabelle joined Danone Nutricia Research where she began managing research projects investigating the short term health impact of dehydration. Her current research focus is the nutritional assessment of fluid intake.

Recent research has demonstrated that a low fluid intake in the short term can impair cognitive function [(1)]. In the long term a low fluid intake has been associated with an increased risk of the development of chronic disease [(2)], whereas a high water intake seems to have a potential protective effect on the kidney [(3)]. However the relevance of this research for the general population is seldom pointed out since few food surveys report on total water intake (water from food moisture and fluids) or fluid intake (drinking water and beverages). Even fewer studies actually assess with biomarkers such as urine osmolality the hydration status in a sample representative of the general population. Consequently the proportion of individuals meeting the dietary reference intake of total water intake is rarely identified, let alone the proportion of individuals being optimally hydration. An inadequate water intake is nevertheless a concern as reported by recent publications: in 6

European countries the proportion of adult individuals at risk for an inadequate intake ranged from 24% (Germany) to 71% (France) [4].

(1) Armstrong LE, Ganio MS, Casa DJ, Lee EC, McDermott BP, Klau JF, et al. **Mild dehydration affects mood in healthy young women**. *J Nutr 2012 Feb;142(2):382-8.*

(2) Strippoli GF, Craig JC, Rochtchina E, Flood VM, Wang JJ, Mitchell P. **Fluid and nutrient intake and risk of chronic kidney disease.** *Nephrology (Carlton) 2011 Mar;16(3):326-34.*

(3) Sontrop JM, Dixon SN, Garg AX, Buendia-Jimenez I, Dohein O, Huang SH, et al. **Association between water intake, chronic kidney disease, and cardiovascular disease: a cross-sectional analysis of NHANES data**. *Am J Nephrol 2013;37(5):434-42.*

(4) Guelinckx I, Ferreira-Pego C, Moreno LA, Kavouras SA, Gandy J, Martinez H, et al. **Intake of water and different beverages in adults across 13 countries.** *European Journal of Nutrition 2015;54 Suppl(2):S45-S55.*

“In 6 European countries the proportion of adult individuals at risk for an inadequate intake ranged from 24% (Germany) to 71% (France)”

Impact of mild dehydration in daily life

Dr. Nathalie Pross
Biotrial, Didenheim, France

Nathalie Pross is a neuropsychologist. She received her Ph.D. in cognitive psychology at the University of Poitiers (France).

Appointed as neurocognition expert, she is working since 10 years in the field of clinical trials (mainly for pharmaceutical companies but also for food and cosmetic industries). Her main research domain is cognition in relation with mental diseases, sleep disorders, ageing and hydration.

Since 3 years, she is employed by Biotrial Neuroscience, a French Contract Research Organisation (CRO) specialised in early drug development and research in neuroscience.

There is a growing body of studies dealing with the effects of dehydration, which is mostly induced in athletes and soldiers using heat and/or exercise. However, few studies examined the proper effects of dehydration in everyday life. Using restricting water intake to induce dehydration appears to be the most appropriate method to mimic a normal daily situation. In a first study, we measured the effects of a mild dehydration induced by water deprivation over a 24-h period on several mood and cognition parameters in healthy young women. The results showed that mood state and sensation were significantly affected by dehydration but not cognition. More precisely, the first deleterious effects of dehydration were observed very early on in this study (i.e., in the morning after 12–16 hours of fluid deprivation).

> Results show that in everyday life, many people may experience mood impairments due to dehydration

These results showed that in everyday life, many people may experience mood impairments due to dehydration (e.g., people going to work or to school without breakfast, or busy working people skipping lunch or forgetting to drink during a busy working day). These results conducted to another study aiming to examine the effects of mild changes in water balance during normal activities of daily living. Habitual high-volume (≥2L/d) and low-volume (<1.2L/d) drinkers were asked to respectively decrease and increase their daily water intake during 3 controlled intervention days during which mood and sensation assessments were repeated several times. The results suggest that an increase or decrease in habitual water intake have, respectively, an improving or worsening effect on mood and sensations depending upon an individual's habitual drinking habits. Thus, even subtle changes in habitual fluid intake led to significant changes in mood states and physiological sensations. These results should encourage adopting optimal drinking habits (i.e.; ≥2L/d) in order to improve mood state.

Drinking water and kidney diseases

Dr. Ivan Tack
CHU Toulouse, Toulouse, France

Professor Ivan Tack, MD, PhD is a nephrologist, Head of the Department of Clinical Physiology (Rangueil Hospital) and Chairman of the Deparment of Medical Physiology at Toulouse School of Medicine, Paul Sabatier University – France.

His clinical activity mostly focuses on water and electrolytes disorders, inherited tubular diseases and metabolic impact of nutritional disorders, including renal stone diseases and osteoporosis.

Concomitantly he is involved in experimental research (INSERM Unity 1048, Toulouse) with a focus on early protection from renal diseases based on in vivo experimental modelling.

Water is the main component of human body. Maintenance of body water compartment distribution is critical for cell volume and function, nutritive and depurative actions of interstitial volume and adjustment of plasma volume, the main determinant of long term regulation of blood pressure.

Water turn-over is variable, as both fluid intake and output may vary tenfold. Thus, maintenance of water balance relies on:

- osmodetection,
- regulation of Arginine Vasopressin (AVP) secretion that in turn modulates urine volume,
- finally, adjustment of beverage intake under the control of thirst. As the body is unable to store excess of water, the inability to save body water (by the kidney) or to replace it (by drinking) results in dehydration responsible for osmotic stress.

Whereas water homeostasis is highly efficient to protect us against acute dehydration, little is known about the impact of daily water-saving in case of chronic low fluid intake (i.e. in low drinkers). Such a situation does not result in dehydration, but leads to mild but prolonged stimulation of AVP secretion and reduction of urine volume.

Prolonged renal water saving increases the risk of renal stone disease and, in women, the risk to develop recurrent urinary tract infection. Recently, epidemiological studies have linked both low fluid intake and low urine volume to the risk of chronic kidney disease.

Prolonged antidiuresis resulting from increased plasma AVP concentration is common in humans. Since AVP is also a stress hormone, this raises the question of its long term impact. There is growing evidence for relationships between antidiuresis, AVP and the risk to develop type 2 diabetes or components of the metabolic syndrome.

Medical knowledge in this field is only emerging. However, proofs of concept are already sufficient to encourage people to drink at least enough water to meet published dietary reference values.

“Recently, epidemiological studies have linked both low fluid intake and low urine volume to the risk of chronic kidney disease”

Water is the healthiest and most natural way to hydrate

Water is a vital nutrient for our body. On average 60% of an adult's body weight is composed of water. As such, water is our most important macronutrient in quantitive terms. It is essential to life, and we would only survive a few days without it.

The **European Federation of Bottled Waters** (EFBW) believes it is important to promote the benefits of drinking water in adequate quantities. The Federation advocates policy makers and regulators to adopt and promote national guidelines on healthy hydration and water intake.

The **European Food Safety Authority** (EFSA) states that water contributes to the maintenance of normal physical and cognitive functions and normal thermoregulation. Based on the EFSA's scientific opinion on adequate water intake [1], women should drink 1.6 litres and men 2 litres every day, assuming that food contributes on average 20 % of the total water intake.

Watch our video on water and hydration:

Water is the healthiest and most natural way to hydrate because it contains zero calories, no sugar and no chemicals. Improving drinking habits can make a simple and significant contribution to a healthier lifestyle. Nutritional policies and education have an important role to play in that context.

EFBW members regularly undertake pro-water campaigns to raise awareness on the importance of healthy hydration across Europe and to encourage people to drink water.

[1] Source : EFSA Journal 2010 ; 8(3) : 1459 (48 pages)

About EFBW

The **European Federation of Bottled Waters** (**EFBW**) is the voice of the bottled water industry, dedicated to promoting the unique qualities of natural mineral and spring water among EU institutions and international organisations. Natural mineral and spring waters must both be from a designated underground origin only and be safe to drink at source, where they must be bottled directly. They may not be disinfected nor chemically treated

EFBW is a registered international not for profit trade association with a membership base of national trade associations and direct member companies. In total, EFBW represents almost 600 natural mineral and spring water producers in Europe. **EFBW** offers expertise in regulatory issues, scientific and technical affairs as well as matters relating to health and the environment.

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