

Refuting the Aqua-Dogma: An Interview with Dr. Heinz Valtin

By Kristen M. Effensohn '05

How does society react when the validity of an already established rule is questioned and found to be unsubstantiated? On August 8th of this year, the *American Journal of Physiology* published an invited review by Dr. Heinz Valtin entitled "Drink at least eight glasses of water a day'- Really? Is there scientific evidence for '8x8'?" For years, common advice from health magazines, newspapers, even doctor's offices, had been to remember to drink eight, 8-ounce glasses of water each day in order to maintain healthy water balance. In search of the origins and scientific evidence behind this apparently ubiquitous message, Valtin, with the assistance of librarian Sheila Gorman, conducted an extensive ten-months literature review and found no scientific basis for this "8x8" advice.

Two years ago, after a notable health columnist for the *New York Times* stated that Americans should drink at least eight glasses of water a day, Valtin, a retired professor and former chair of physiology at Dartmouth Medical School, began to wonder about the authority of such advice. After conferring with colleagues, Valtin surmised that both the origin of such advice and its scientific basis appeared to be unknown. A notable expert in the field of physiology and author of two widely used textbooks on the kidney and water balance, Valtin was invited by the *American Journal of Physiology* to research and publish his findings on the origin of "8x8" and any scientific evidence supporting it.

After ten months of thorough searching, Valtin found no scientific evidence of a physiological need for eight glasses of water a day. The closest reference to "8x8" came in the obituary of the respected nutritionist Dr. Fredrick Stare in April 2002. The obituary stated that Dr. Stare was "an early champion of drinking at least six

glasses of water a day" (Saxon 2002). In one of his books, Stare briefly advises to drink "some-where around 6 to 8 glasses" of water each day in the form of tea, coffee, milk, soft drinks, or beer, although he cites no scientific studies for this advice. Furthermore, Dr. Stare states in the same passage that the amount of water we need "is usually well regulated by various physiological mechanisms" and that "fruits and vegetables are also good sources of water."

Another possible origin of the rule is an announcement by the Food and Nutrition Board of the National Research Council in 1945 (and since) suggesting an allowance of 2.5 liters of water daily or "1 milliliter for each calorie of food." They added: "Most of this quantity is contained in prepared foods" (Food and Nutrition Board 1945). In other words, their recommendation referred to total amount of water needed, not water to be drunk. It has been suggested that the public possibly ignored the last sentence. As a result, the Food and Nutrition Board recommendation was erroneously understood by the public to mean eight glasses of water per day.

Valtin stresses the importance of the consumption of water in daily life, but finds that eight, 8-ounce glasses can be quite excessive for the average healthy adult in a temperate climate leading a sedentary life. Valtin defines a "sedentary individual" as one who "works at a desk most of the day" and may partake in "moderate exercise without breaking out in a big sweat." While Dr. Valtin doubts that most people need "8x8," he emphasizes that there are certain conditions in humans, which require large amounts of fluid; common examples are persons with kidney stones and those partaking in strenuous physical exertion, especially in hot climates.

Valtin points out that the human body is



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Prepackaged Dartmouth-brand bottled water sells for \$1.50/20 oz. - a \$6.00/day habit if one is following the 8x8 advice.

highly efficient at maintaining proper water balance. The so-called osmoregulatory system, which has been the focus of his research, controls the amount of water excreted or retained by our kidneys by regulating the blood concentration of antidiuretic hormone and by eliciting thirst. This system is sensitive, quick, and accurate (Valtin 2002). During water consumption, the blood is diluted and the secretion of antidiuretic hormone is inhibited, leading to increased urination. During restriction of water, the blood

becomes concentrated, which stimulates the secretion of antidiuretic hormone and induces thirst. Water is thus returned to the body by the kidneys and replenished by drinking.

While Valtin found no scientific references in support of the 8x8 rule, he did find evidence to the contrary. Surveys of fluid intake of thousands of healthy adults, published in peer-reviewed journals, suggest that the average American adult consumes 6 to 7 glasses of fluid a day, only some of which is plain water. In addi-

tion, Valtin states, “there is good scientific evidence showing that habitual drinkers of coffee, tea, and soda can count [these drinks] towards their daily total fluid intake.” Proponents of the 8x8 rule usually exclude caffeinated beverages from the daily total. According to Valtin, a number of surveys showed that caffeinated drinks, along with moderate consumption of alcohol, “constituted nearly one-half of the daily total fluid intake” (Valtin 2002).

The notion that individuals must drink eight glasses of water a day has become almost a mantra in recent years. Valtin’s article in the *American Journal of Physiology* has caused a controversy both nationally and internationally with the sudden revelation that the 8x8 rule lacks scientific proof. Since August, Valtin has conducted numerous phone interviews with the media in South Africa, Australia, New Zealand, Europe, Canada, and the U.S. – just a few of the many countries that have expressed concern in Valtin’s findings. In regard to the repercussions of his finding, Valtin states, “there has been a much greater response than I had anticipated.” In addition to dealing with multiple phone interviews, Valtin says, “I’ve been working every day to answer the back log in email.”

Though the potential effect of the findings on the bottled water industry is large, Valtin has “not heard from the industry directly...they haven’t been after me.” Sales of bottled water have grown exponentially in recent years, even becoming the main product of the Coca-Cola and Pepsi Cola corporations. Though the industry has not yet confronted Dr. Valtin, it appears that it has indirectly expressed concern about his article. On the website, www.bottledwater.org, Dr. Barbara Levine, Associate Professor of Nutrition in Medicine at the Weill Medical College of Cornell University, addresses direct concern about the negative influence of Dr. Valtin’s study. In her position statement, “Water Consumption is Critical For Human Health, Wellness and Hydration,” Levine mentions that “The 8x8 guidance has been a standard in the health profession and there are many published, peer-reviewed scientific studies that unquestion-

ably demonstrate the crucial role of water in the human body” (Levine 2002). Dr. Valtin retorts: “Of course, water consumption is critical for human health and of course, water plays a crucial role; no one argues that. But Dr. Levine’s conclusion that, therefore, we all need at least eight glasses of water a day is unproven and a non sequitur. It is like arguing that our homes run on electricity, and that, therefore, every house needs at least 1,000-ampere service when 100 or 200 amps is sufficient.” Valtin points out further that Dr. Levine’s position statement does not cite a single reference.

How much water, then, should the average healthy, sedentary individual drink? Dr. Valtin asserts: “A single volume does not fit all, it has to be individualized.” The strongest evidence that the human body does not need eight glasses of water comes from the sensitivity of the osmoregulatory system and the numerous studies that have found healthy adults consuming less than eight glasses of water a day. Valtin suggests to “drink your customary amount, plus when you are thirsty, and as long as you are producing urine of a moderately yellow color (the color of a urine sample produced in a doctor’s office), you should be alright.”

Dr. Heinz Valtin’s article can be viewed at:
http://www.dartmouth.edu/dms/news/2002_h2/08aug2002_water.shtml

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