BioRev Nano Hydrogen Water

H■ CellNova / English edition

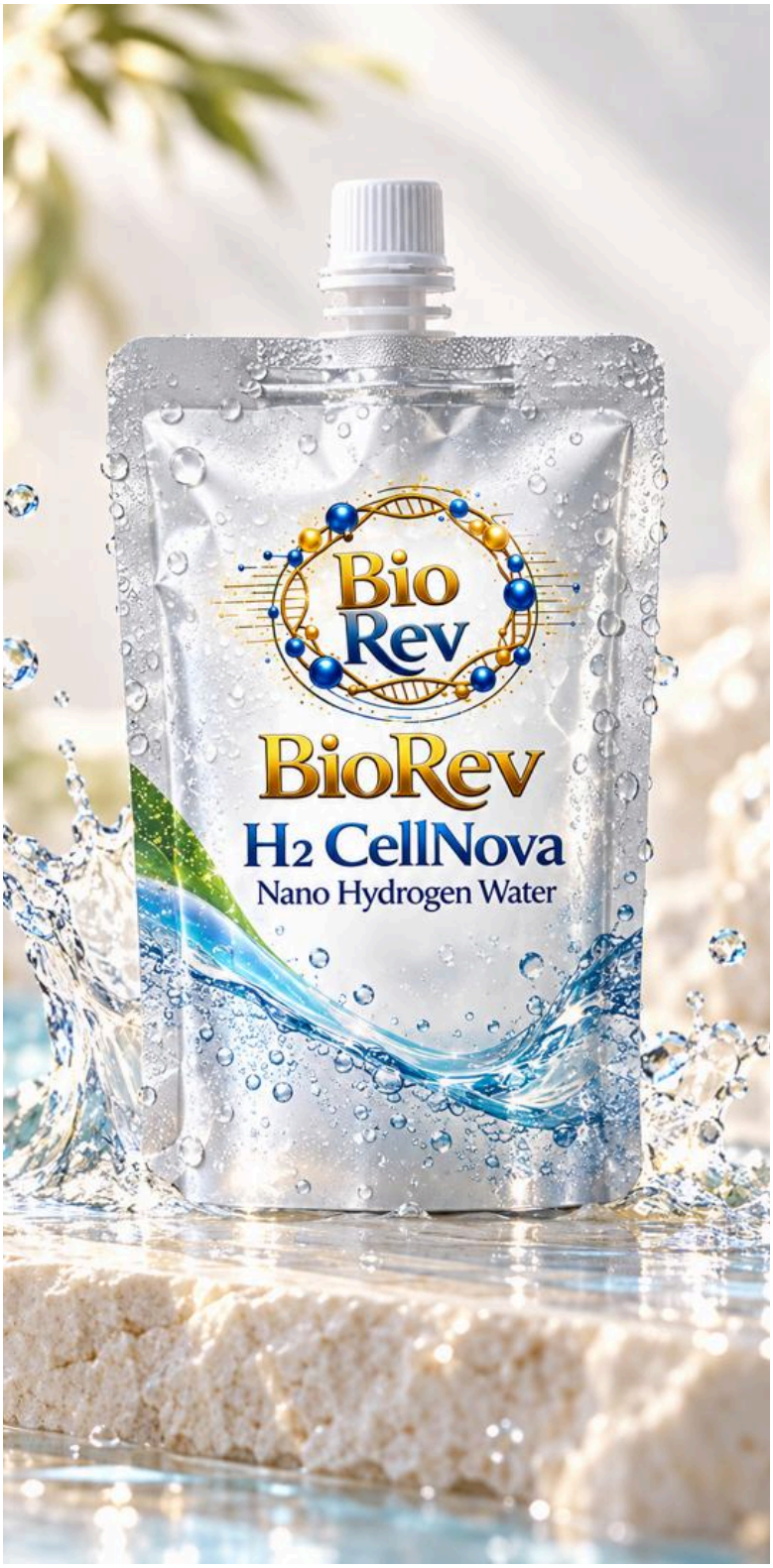
Small bubbles. New possibilities for water.

A BioRev water collection focused on hydrogen and nano bubbles. This book explores gas in water, fine bubbles and packaging for drinking, from the opening product introduction to the final contact page.

Inside this edition

Product and drinking temperature / Nano-bubble basics and applications / Technical values and development / Patents and research / Hydrogen retention and packaging / Everyday use / Academic exchange and quality documents / Prices and enquiries.

Technical values and research history are drawn from the supplied manufacturing reference. They are distinguished from BioRev's sales information.



Water for everyday life

Product introduction and drinking temperature



A convenient capped pouch

BioRev H■ CellNova is a nano hydrogen water collection for everyday drinking. Open the pouch when ready, at home, during a work break or while travelling.

The reference’s “45°C” suggestion

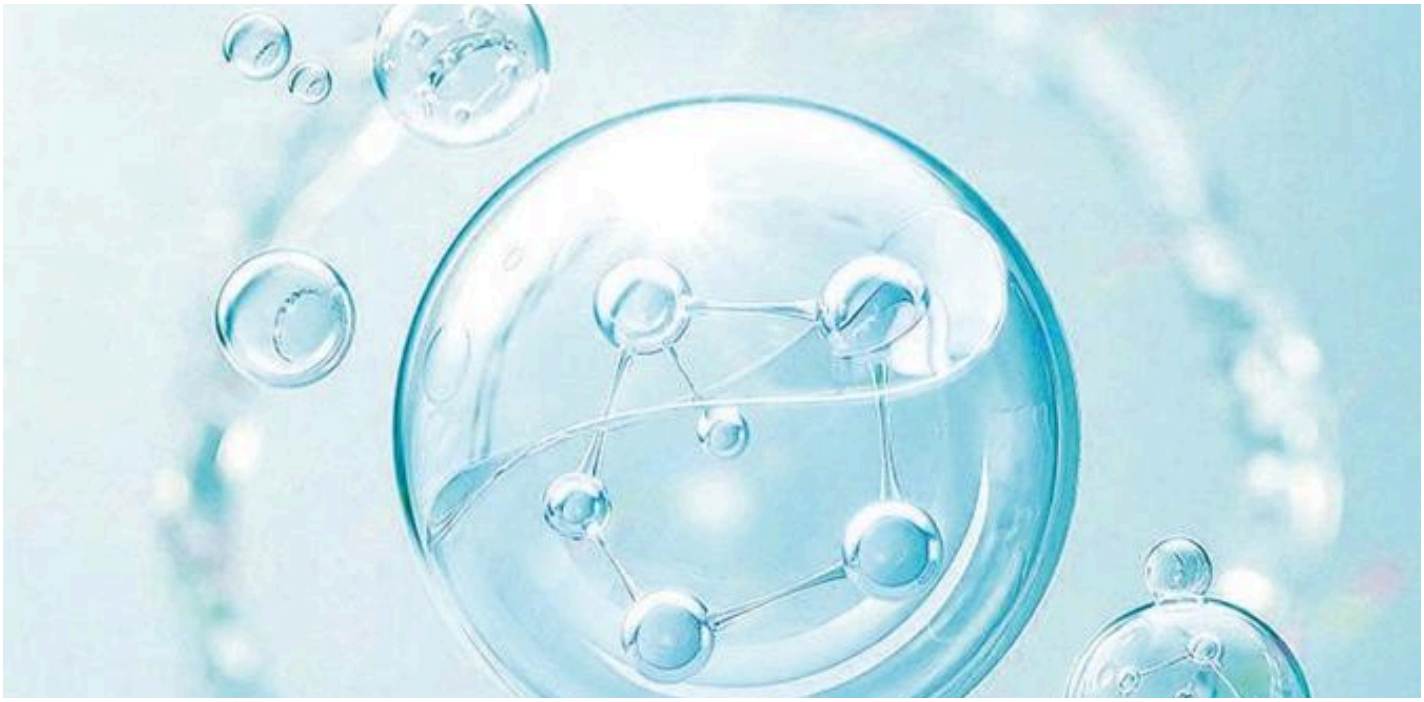
The source brochure proposes drinking at 45°C. This is its suggested drinking image, not an independently established optimum for BioRev. If warming the product, follow its label. Do not microwave the pouch.

How much to drink

The original reference states “two pouches daily”. Follow the purchased product’s directions. If you have been advised to restrict fluid intake, that advice takes priority.

What are nano bubbles?

Water and gas on a very small scale



Nano is a unit of size

One nanometre (nm) is one billionth of a metre. The reference introduces this scale and fine bubbles dispersed in water. Hair thickness varies, so the unit definition is more useful than a fixed hair comparison.

Dissolved gas and bubbles

Hydrogen water contains dissolved hydrogen gas. Bubble diameter and bubble count describe gas bubbles within a liquid. Dissolved hydrogen concentration and bubble count are different measurements.

Characteristics described in the reference

The brochure describes bubbles a few to several hundred nanometres across persisting in water and cites Chemosphere (2011). Gas type, water quality, production method, temperature and measurement method matter when evaluating that description.

Areas of application

Research topics and institutions named in the reference

Environment and energy

Algae removal and cultivation, biodiesel applications and fuel efficiency. Korea Atomic Energy Research Institute’s radiation research institute; Chung-Ang University and others.

Food and beverages

Oxygen-enriched water, hydrogen water and functional drinks. Fermentation and microbial research at Sunchang fermented-sauce research institutions.

Agriculture and livestock

Special crops, mushrooms and antibiotic-free poultry trials. Sunchang agricultural technology and longevity institutes; Jeonbuk National University.

Materials and shipping

Concrete strength and reduction of ship-hull friction using fine bubbles.

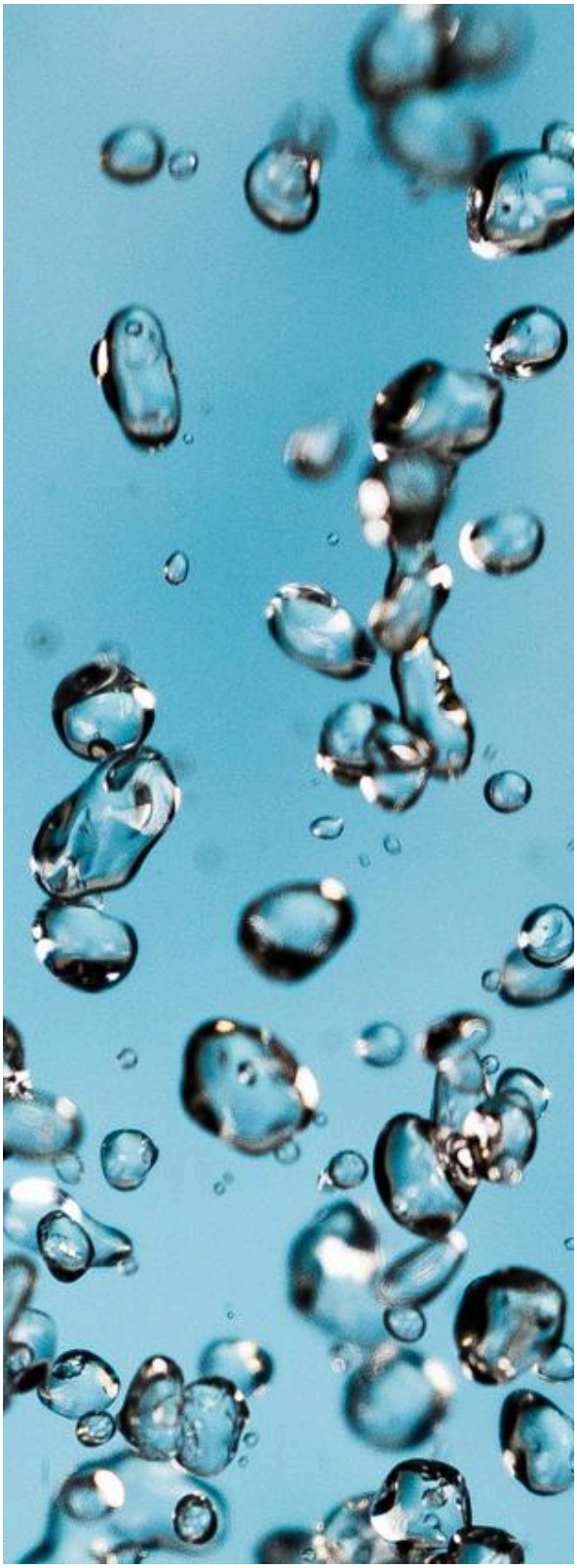
Biological research

Blood vessels, metabolism, skin, imaging and cell culture. Konyang, Wonkwang, Chung-Ang and Michigan State universities are named.

How to read these applications

The list includes environmental work, cell experiments and animal studies. It does not establish the same effects in people drinking the product.

The source also illustrates information technology, biomedicine and aerospace applications, citing the China Digital Science Museum.



Technical values

Reference figures from manufacturing materials

Bubble diameter
100 nm or below

Bubble count
At least 200 million per mL (cc)

Oxidation–reduction potential
–100 to –550 mV

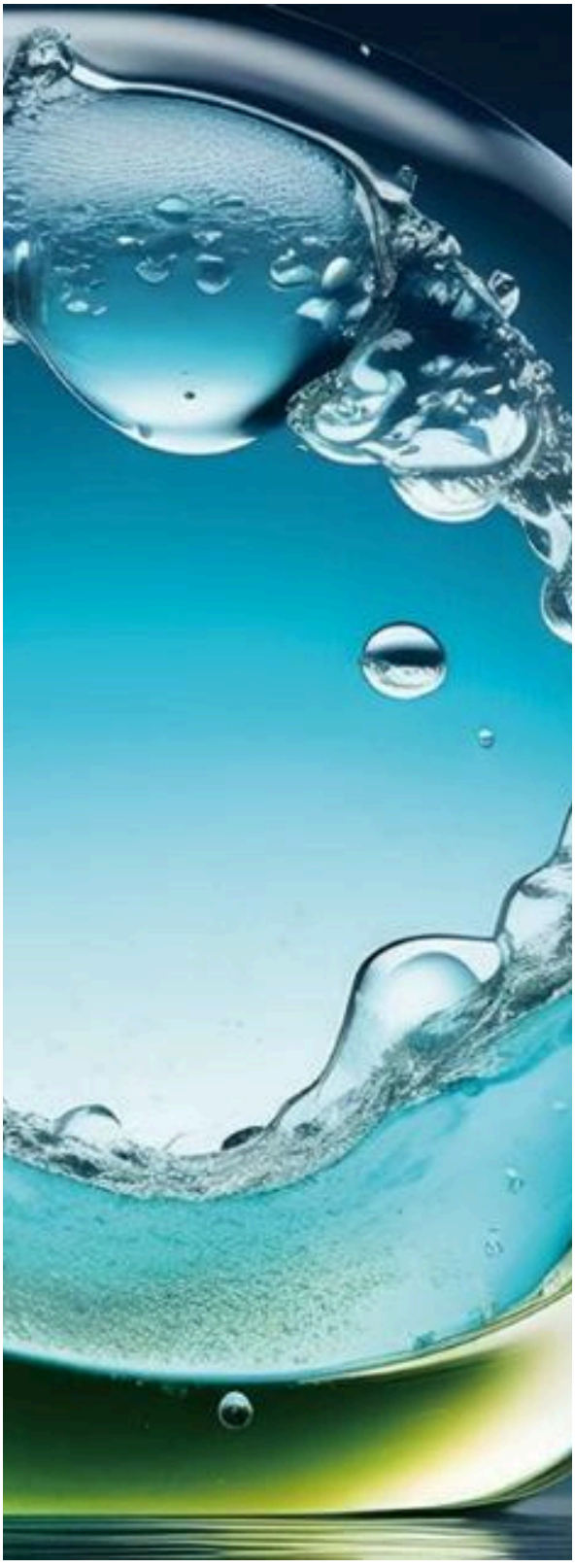
Hardness
50 or below; unit and method not specified

pH
7.0–7.5

Dissolved hydrogen
400–1,800 ppb

Water source description
Sunchang, Korea; a bedrock water layer 200 m underground at a site described as 300 m above sea level.

Water testing record
Testing every six months, according to the source.



Context for the figures

These are source-reference values, not BioRev batch test results or guaranteed finished-product specifications. Read them with the measurement date, temperature, container and sealed/opened conditions.

The source’s claims of freezing at room temperature and faster absorption than sports drinks lack test conditions and are not adopted as BioRev product properties.

Technology development

2009–2012 / History described in the reference

2009
Nano-bubble compression technology developed; measurement by UK NanoSight mentioned. Portable oxygen-enriched water apparatus application: 10-2010-0008128.

2010
Establishment of a nano-bubble-related company recorded.

2011
Nano-bubble beverage equipment developed; joint research agreement with Chung-Ang University. Patent registration: 10-1077877.

2012
High-technology business registration; patent 10-1153290 for increasing nano-bubble content in liquid. Investment memorandum with Sunchang, selection by a Korean water organization and a manufacturing-company name change recorded.

This is the manufacturing technology's history. It is not BioRev's incorporation date, patent ownership or awards history.



Research and expansion

2013–2015 / History described in the reference

2013
Record concerning Sunchang technical adviser Lee Chang-hwan. Research with Konyang University; cooperation with Sunchang and haerimfucoidan; joint work with the Korea Atomic Energy Research Institute’s radiation research institute.

2014
New factory in Sunchang’s Ssangam-ri industrial complex. Supply agreement with China JAM Biotechnology. Research and commercialization exchanges with a Thai national university and related institutions.

2015
FDA facility-related registration recorded; presentation at Sunchang’s international functional-water conference; US cooperation factories and research initiatives, Middle East supply, water-system technology cooperation, a golf-event beverage selection and exports to the Americas.

Other names in the source

Ocean Trading, Royal Ace Trading and the YTN & VOLVIK Women’s Open appear in the reference. Their inclusion does not imply current BioRev contracts or endorsements.

FDA registration records do not constitute approval of therapeutic effects from drinking the product.



Patents and manufacturing

Equipment technologies identified in the reference

10-1153290
Apparatus for increasing nano-bubble content in liquid.

10-1077877
Portable apparatus for producing oxygen-enriched water.

10-2010-0008128
Application number given for the portable oxygen-enriched water apparatus.

Production, packaging and drinking

The bubble-generation equipment, the container retaining gas after production and effects on people who drink a product are separate subjects of evaluation. Patent numbers help locate information about the equipment.

These are technologies cited by the manufacturing reference. Listing them neither represents BioRev as the patent holder nor proves drinking benefits.



Hydrogen and oxidative stress

Understanding the research background



Reactive oxygen species also have biological roles

Reactive oxygen species are involved in immunity and cellular signalling. The reference discusses excessive oxidative stress in research areas including inflammation, ageing, metabolism and blood vessels.

Research and everyday drinking

Hydrogen has been studied in cell and animal oxidative-stress models. Inhaling hydrogen gas, dissolving it in culture medium and drinking hydrogen water are different routes and cannot be treated as equivalent experiments.

The source’s “reactive oxygen + hydrogen = water” graphic is simplified. It does not mean drinking removes all reactive oxygen species or cures disease.

An early hydrogen study

Nature Medicine / 2007

Research in cells and an animal model

Ohsawa and colleagues studied oxidative stress in cultured cells and a rat model of cerebral ischaemia–reperfusion. They reported effects involving hydroxyl radicals and changes in oxidative injury following hydrogen-gas inhalation.

This was not a human drinking trial of the finished BioRev product. It cannot, on its own, establish therapeutic efficacy for BioRev water.

Cultured cells
Oxidative stress induced by several methods; changes with hydrogen observed.

Animal model
Hydrogen-gas inhalation evaluated in acute cerebral ischaemia–reperfusion.

Interpretation
Consider the test subject, delivery route, concentration and endpoints; distinguish these from beverage trials.

Ohsawa I, et al. Nature Medicine 13, 688–694 (2007). DOI: 10.1038/nm1577. https://www.nature.com/articles/nm1577

The source discusses wide health and medical applications; this edition presents them as research background.



Research areas in the source

Exercise, skin, metabolism and neurology

Exercise
Muscle fatigue, endurance and recovery. A university basketball-player comparison is attributed to a Korean living-environment society, 2009.

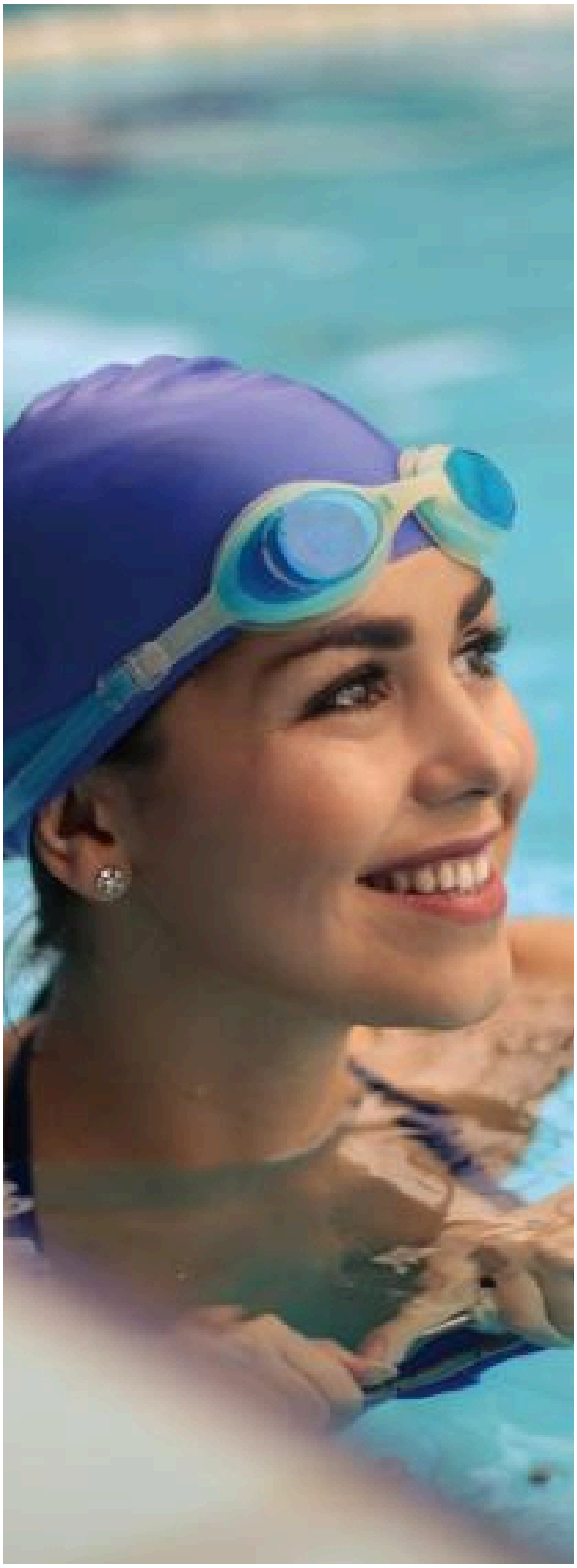
Skin and UV
UV-A, collagen, oxidative stress, cell damage and wrinkles. Journal of Photochemistry and Photobiology B (2011); a Medical Gas-related journal (2013).

Metabolism
Diabetes- and obesity-related research. Obesity (2011); Nutrition Research (2008).

Brain and nerves
Brain Research (2010); Neuropsychopharmacology (2008); Biochemical and Biophysical Research Communications (2008).

Immune and skin responses
Immunity and allergic skin symptoms. “NCBI, 2014” is cited without an individual paper title.

These are the source’s research categories. Some references are incomplete; the list alone does not verify study outcomes or applicability to BioRev products.



Comparison and retention figures

Reading the source’s numbers in context

Vitamin C
176×

Vitamin E
431×

Catechins
290×

Polyphenols
221×

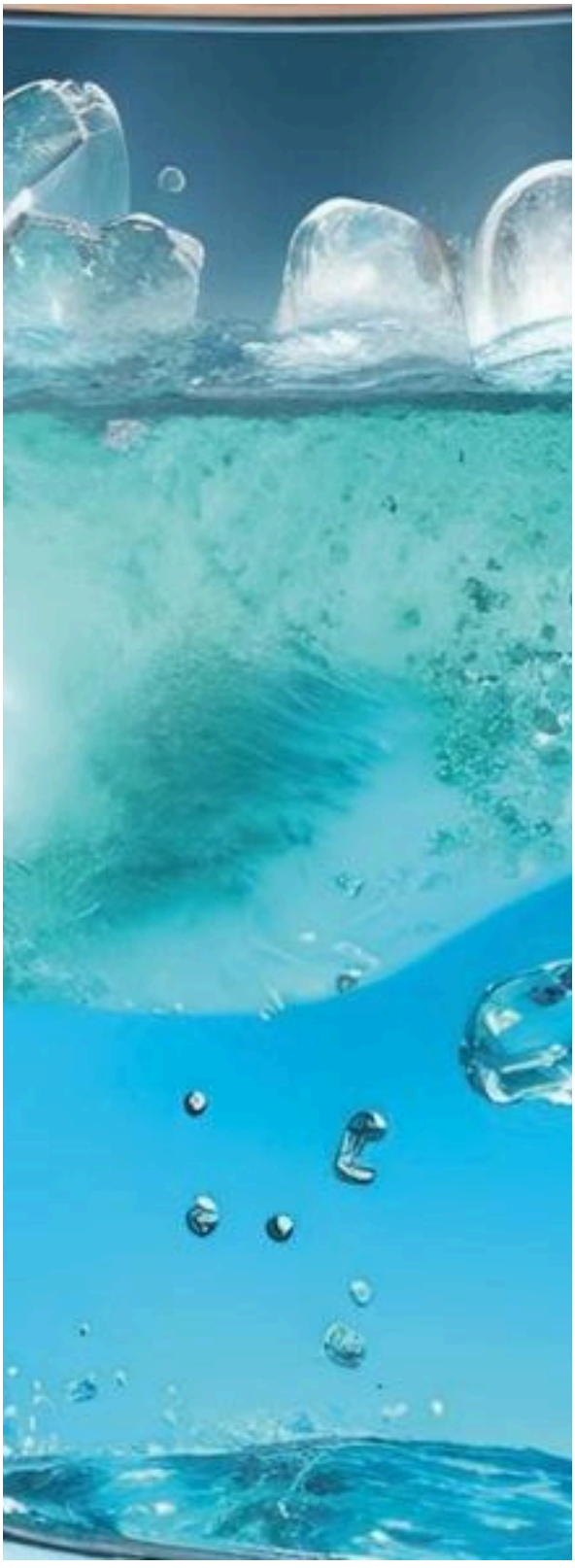
Coenzyme Q10
863×

These ratios appear in the source’s antioxidant comparison. Concentrations, test methods and comparison conditions are not supplied. They are not presented as BioRev drinking effects or superiority over nutrients.

Hydrogen retention statements

The source claims bubble persistence beyond 24 months, sealed retention beyond 12 months and around 80% hydrogen remaining 12–24 months after opening. These are source claims, not BioRev shelf-life or after-opening storage guarantees.

The source also states about three million hydrogen molecules per bubble and “2.98 trillion” per 500 cc. Its definition and calculation are inconsistent, so this is not adopted as a finished-product molecule count.



Bubbles, hydrogen and packaging

From production to drinking



Generating fine bubbles

The reference describes 100 nm bubble-generation technology and accumulation of fine bubbles in liquid. It uses a “small capsule” analogy to explain its approach to hydrogen retention.

Considering the packaging

Beverage packaging helps keep contents hygienic and supports handling, transport and storage. The source combines bubble generation with a packaging-based retention concept.

Consume promptly after opening

Opening changes the conditions. Follow the product’s storage label and drink promptly afterwards. A schematic bubble explanation alone does not establish long-term retention or delivery inside the body.

Everyday life and movement

Drinking occasions and handling



After yoga, a walk or a run

The reference illustrates drinking occasions for people enjoying yoga, running, active routines and a considered lifestyle. BioRev likewise presents hydration as an everyday habit.

Before and after opening

Check for tears, swelling and leaks. Avoid direct sunlight and high temperatures. Consult the label for storage and the best-before date. Handle hygienically and consume promptly once opened.

The source discusses enhanced transport or absorption of vitamins and medicines. This edition does not recommend using the drink to boost medicine absorption. Follow the medicine’s instructions for drinking water.

Academic and media records

Appearances listed in the manufacturing reference

2012
Selection as a quality water by a Korean water organization.

16 November 2013
Reported introduction as a Korean water at the 12th Japanese Society for Functional Water academic meeting.

31 October 2015
Sunchang international functional-water conference. Dr. Ryu Young-chun of Konyang University: food safety, metabolism, obesity, diabetes and cancer-metastasis-related experiments described.

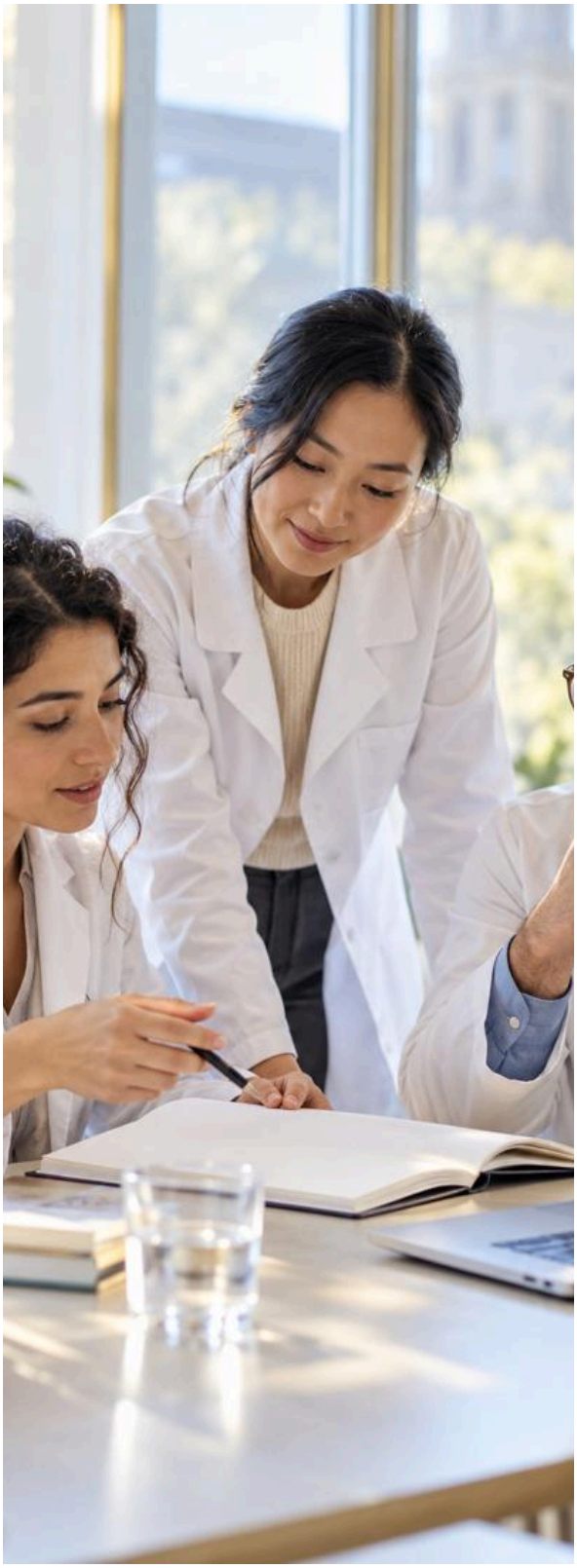
24 January 2013
Kookmin Daily article on differentiated water-business development.

27 October 2013
SBS special programme, described as “The Miracle of a Glass of Water”.

7 April 2014
MBN’s Cheongi Nuseol, episode 85, described as a water-themed programme.

2 December 2014
YTN Science programme concerning water commercialization.

These are translated source records, not appearances, endorsements or awards for BioRev. Media or society names are not guarantees of product efficacy.



Quality documentation

Manufacturing records and finished-product information

The reference mentions FDA registration, ISO 22000, HALAL and selection by a water organization. Scope depends on the business, facility, product, applicability and validity period.

Product label
Name, contents, ingredients, storage, best-before date, seller and manufacturer.

Test report
Batch, measurement date, temperature, method and measured values such as dissolved hydrogen.

Registration or certification
Covered facility, entity or product; scope, issuer and validity.

Patent information
Invention, number, rights holder, territory and status.

Manufacturing and sales roles

BioRev is the brand and sales enquiry contact in this book. Manufacturing and research records are provided as technical background. Changing the brand name does not change the actual manufacturer or research institution.

This is everyday drinking water, not a means to diagnose or treat disease or replace medication. Follow any relevant medical instructions.



Contact BioRev

Products, orders and retail enquiries

Contact BioRev about the H■ CellNova Nano Hydrogen Water collection, purchases and retail opportunities.

Japanese yen
JPY 2,000

Chinese yuan
CNY 168

US dollars
USD 20

Korean won
KRW 20,000

Owner-specified regional display prices. Confirm quantities, delivery and order terms when purchasing.

Product and sales enquiries

BioRev
mina@biorev.jp
https://biorev.jp

Please include the product name, quantity, destination country or region and your enquiry. Recurring purchases and distribution enquiries are welcome.

Based on the supplied 11-page nano-bubble-water technical brochure. Research reference: Ohsawa et al., Nature Medicine 13, 688–694 (2007), DOI: 10.1038/nm1577.

