

[nature understood, nature copied]



BORMIA[®]
BIO-QUELLWASSERGENERATOR
& BIO-HOMOGENISIERER



Are you fit for BIONIK... are you fit for innovation in modern food processing...
are you fit for functional food... are you fit for your future?

1/2022

Technical data sheet for oranic-colloid homogenizer (natural technology... for self marketers) Made in Germany

Product no.: B-2091e ... efficient, highly innovative, cost-saving & maintenance-free... **What more do you want?**

Article Description: BORMIA organic-colloid-homogenizer Permanent process for organic and technical liquids

Components: colloid-homogenizer

Material: Stainless steel V4A, DIN 1.4571 (suitable for food) - radiation-free, i.e. certified radioactivity-free.
4 stainless steel spirals (stainless steel V4A) 2 x clockwise and 2 x counterclockwise (material V2A 1.4319-NS-CWC)

Performance/tech. data Max. 10 bar

Pressure: optimum 2.5 bar. More pressure should not be applied to organic liquids... Pressure increase does not cause a higher flow rate!

Diffuser: Approx. 900 ltr/h (approx. 16/ltr/min. water, at 2.5 bar)... depending on the viscosity of the liquids and the constant pressure performance!
If higher flow rates are required, connect several devices in parallel.

Note: Pressure control via a potentiometer or electrical pressure control fixed at 2.5 bar... The pressure before the homogenizer depends on the viscosity of the treated products. Also the final result in the product depends on the accuracy of the pressure regulation!
For higher flow rate requirements, connect several units in parallel.

Temperature: Suitable for cold and warm flow. Completely welded units available on request.

Connection: DIN 11851: DN 15 connection (milk screw thread... see pic above) and 3/8" thread

Seals: EPDM seals installed in the system (licenced by FDA, KTW and DVGW (food approval)).

Maintenance: maintenance-free! maintenance-free. Attention: Max. Piece size 1mm otherwise danger of blockage.

Installation: Vertical or horizontal

IMPORTANT: Operate the Bormia process only with spiral-, snail- or impeller pump... high speed centrifugal pumps destroy bio-photons (structural forces) in organic liquids... do not use centrifugal pumps after treatment... this has a counterproductive effect!

Dimensions: 40 x 40 mm x 500 mm (diameter, width, length)

Weight: approx. 2 kg

HYGIENE CERTIFICATE of the DVGW:
The composition of this product complies with the provisions of the DVGW, KTW, FDA, NSF, W270, SVGW and ÖVGW food approval
FDA 21 CFR 177.1550

Price: Price on request. Contact us and explain the desired application.

Licence agreement: By agreement and contractual arrangement.

Note 1: Colloidalizing, i.e. energetically building permanent homogenizer for liquids of all types and consistencies. Max. Piece size 1.5 mm. Colloid formation means that the individual liquids to be mixed are transformed into a homogeneous state by repeated rhythmic inversion state. The harmonic (right & left) swirling rolls the individual components (also fats) into each other, 'fuses' them into a stable backmixing-free, increased bioavailable compound. Imagine this process is like turning a stocking inside out during the swirling process. The harmonic (right & left) swirling rolls the individual components (also fats) into each other, 'fuses' them into a stable backmixing-free, increased bioavailable compound. Imagine this process like turning a stocking inside out during the swirling process. All components pass several times through a real originating zero point/crossing point. Through this process the product is rubbed into each other, new and naturally structured. Structure enables stability... Stability maximizes the shelf life of the final product.

The effect on milk and similar products: The pasteurized milk treated with the organic homogenizer has a stable taste in the usual cold chain much longer than the milk pasteurized with conventional methods. It acquires a creamy taste (**CREAM-MILK®**). It does not become stinky until the end of the shelf life. The cream behaves naturally 'creaming', does not stick together anymore and is immediately homogeneously distributed again by simple shaking. Unpasteurized milk behaves similarly. It can be guided in a microbiologically desirable direction by microbiological inoculations (yogurt, kefir and similar microorganisms) (cf. Note 3).

Effects on Rice, soy milk etc.: Effect on the production of rice, soy, almond, oat and spelt milk products etc. can be simplified in the process flow. The Bio-Homogenizer makes quality improvement, higher production efficiency and corresponding cost reductions possible.

Note 2: As a long-time organic beverage developer, I have managed to produce 'unpasteurized fruit concentrates' and, with the help of natural additives and the use of the colloid homogenizer, to keep their taste stable for years. Simply delicious and trendy **RAW'FOOD**. Samples for in-house testing can be supplied on request!

Note 3: The use of unpasteurised fruit concentrates with pasteurisation milk and the use of the Bio-Homogenizer resulted in new, tasty and stable products.

These results are also likely to be obtained with freeze-dried crushed fruits or mixtures. With the Bormia Bio-Homogenizer the user receives a natural technology to realize new product ideas: This means probiotic, **RAW-FOOD** or functional food products.

Areas of application: The use of unpasteurized (RAW'FOOD) fruit concentrates with pasteurization milk and the use of the organic homogenizer, result in new, tasty and much more stable products. These results can also be obtained with freeze-dried comminuted fruit (fruit milk) and other mixtures. Raw milk can also be preserved at least twice as long! This opens up a wide field of probiotic products! Innovative users receive with the colloid homogenizer a highly effective natural colloid technology to realize novel and long thought product ideas e.g. also with whey: Probiotic, **RAW-FOOD** or **functional food** products are currently in trend!

Use of the organic spring water generator: The Bormia bio-springwater generator is ideal for food manufacturers who want to maximize the shelf life quality of their products by using water with long-term stability. It also makes sense to use it in cleaning measures (**germ inhibition***). It reduces costs and increases product safety. Breweries & beverage producers refine the taste quality of their beverages through higher material extract (malt & mash). The brewing process is also optimized, as microorganisms function better with natural vital water and work faster and more stably. For example, there is a report from a brewmaster about the improved mash release behavior (VZ 45). Bormia treatment after pressure filtration is also remarkable, as Bormia restructures filtered liquids (energetic pressure damage), renews them, induces colloidal stability and enables direct bottling of the beer (intermediate storage adé)! The Bormia application saves time & money everywhere.

[Please also study our cell biological and bio-physical certification.](#)

***pressure-damaged tap water is an ideal breeding ground for germs**

import. engl. publishing: [here](#) [here too](#) [and here again](#) [e-book](#) [press-release](#) [brochure](#)

Cleaning: Conventional cleaning or simple organic dishwashing detergent to bind and remove fats... after that, all you need is water and little time.

hints/recommendations: Unfortunately, we cannot list all application examples here. However, please understand that a natural technology runs according to different criteria than conventional technology. With the Bormia Bio-springwater Generator and the further developed Bio-Homogenizer you get - if used properly - a safe technology with qualitatively diverse innovation possibilities for your product portfolio. A 'Living Water' is a many-dimensional different water than a pressure-damaged water and/or a tap water manipulated with technical concepts and methods. Very many shelf life reducing problems in food processing occur because a pressuredamaged water or technically manipulated water is used. Results like undesired germ formation and many more belong to the past with the application of the Bormia process! You can also restore the lost colloidal status for e.g. mineral adjusted brewing water with the Bormia process, in order to always compensate for the accompanying loss of vitality of the water (i.e. biological structural properties). This natural technology can do it!

Ssee english articles here

Test devices: **Test plants for direct marketers** on request! Industrial **test plant is available (NW 40 and 1 1/4" screw thread)** Please contact us...

Summary: As you read in our explanations, Bormia products (Bio-Colloid Spring Water Generator & Bio-Colloid Homogenizer) are a universally applicable natural principle. BIONIK, which means real natural technology, corresponds with nature and can do much more than conventional manipulation technology! BIONIK turns many previous experiences, thought patterns, opinions and the associated limitations upside down! Look forward to a new scope of possibilities in the entire food and processing technology... for your future and your new customer! BIONIK also creates no obscure collateral damage! Our products reduce germs during production and in the product and increase the bioavailability of all ingredients. ... Make your wishes and ideas come true through contemporary product innovations and secure your future on the market.

Application note: Only operate the BIO homogenizer with screw or impeller pumps! Install a nanometer between the pump and the homogenizer, which controls the pump constantly at 2.5 bar. This way you will generate the optimum operating pressure for best results. Do not use high-speed centrifugal pumps after Bormia treatment... this has a counterproductive effect.

WARRANTY: The 3 years warranty on Bormia equipment will be activated if you send us installation photo's of your equipment with your customer number. Please operate all Bormia equipment without further technical/informational manipulations. This will severely limit the Bormia procedure. Communicate with us about your upcoming product innovations with Bormia to avoid improper handling... we consider ourselves your partner for the successful use of this future technology.

NOTE: Please do not store any toxic cleaning agents, garbage, chemicals or similar at the installation site, as these vibrations will be sucked in.

If you have any questions please contact Mr. Althoff... he will be happy to give you further information.

NATUR PUR[®] – BORMIA.DE[®] GUTE LAUNE TRINKEN[®]

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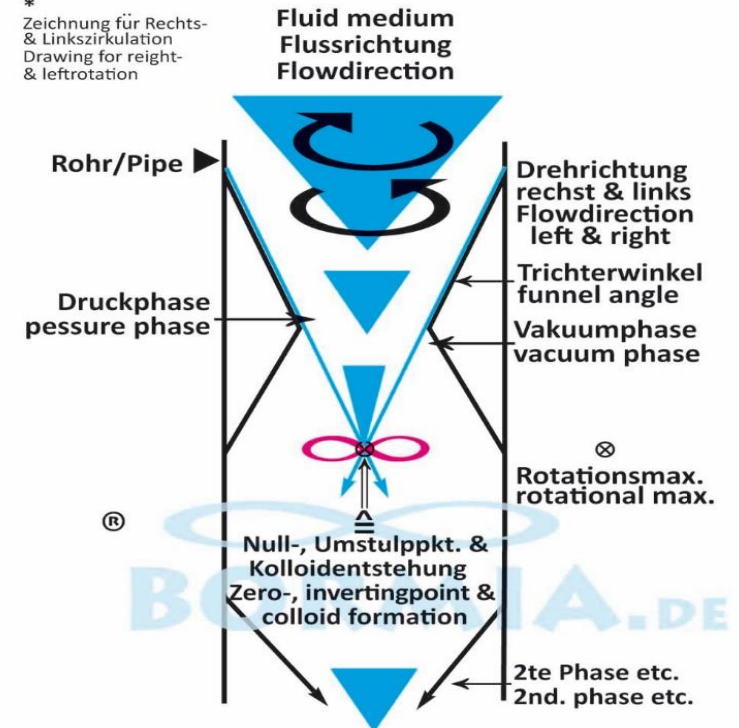
... basic funktion of the device



Organische & kolloidbildende Homogenisation
Organic & colloidforming homogenization

Bormia®-Prinzip (Beschreibung)*
Bormia®-principle (description)

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Zeichnung für Rechts-
& Linkszirkulation
Drawing for reight-
& leftrotation



Fluidmedium kann sein: Wasser, Milch, Saft, Wein, Bier etc., Mixturen davon und techn. Flüssigkeiten!
Fluidmedium can be Water, milk, juice, wine, beer, etc. mixtures of it and also technical fluids.

New organic & colloid-forming homogenizer

Investigations on the beneficial effects of the bionic Bormia®- BIO-Homogenizer, by Klaus Jürgen Althoff (Nadeen), Germany

Based on the article published on page XY by cell biologist Prof. P. Dartsch (www.dartsch-scientific.com) and myself entitled "Bormia: Bionic Spring-Water-Generator and its beneficial effects on human cells". I like to transfer the results presented in this article also to the Bormia® Bio-Homogenisierer and describe how it works. While the parallel article describes the positive effect on the human cell, here the function of the bionic homogenizer is explained.

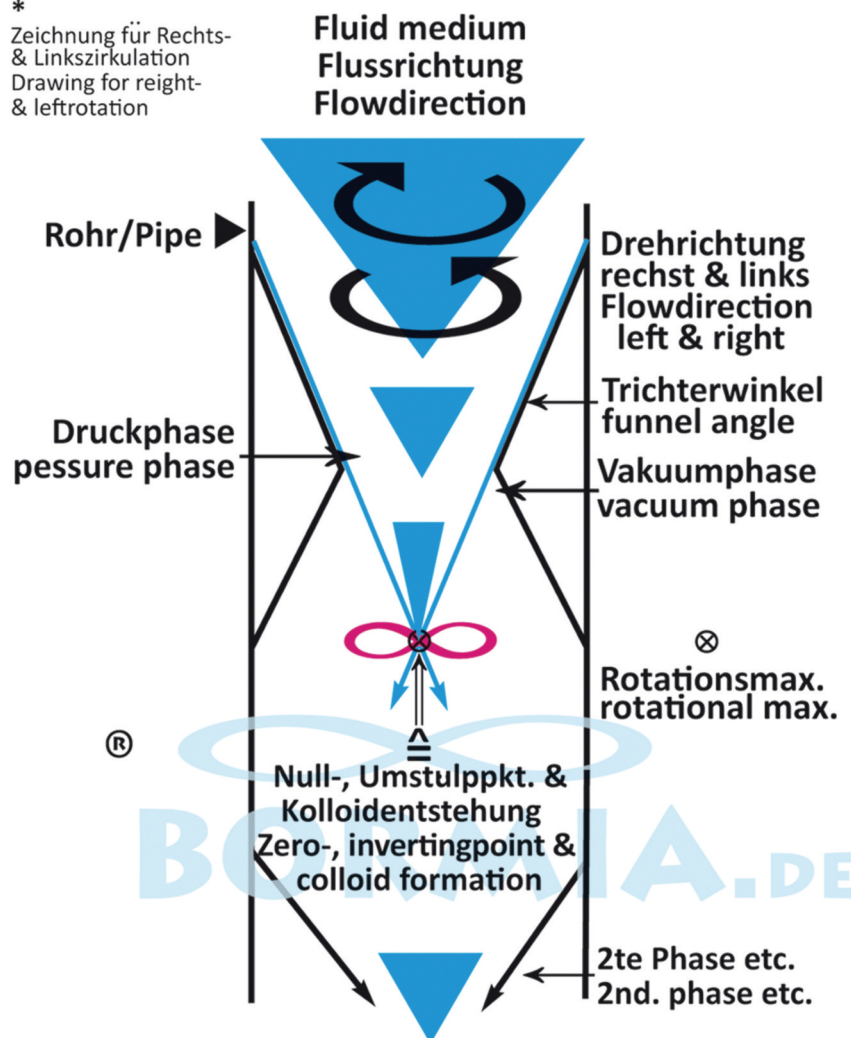
The homogenizer is a further development of the Bormia Bio Spring-Water-Generator. The homogenizer produces organic that is colloidal products. Its function is copied from the human heart, which rotates the blood arterially left into the body and venous right. The bio-homogenizer, built according to this organic model, uses both directions of rotation in rhythmic sequence, parallel and mirror-like, and generates the natural pressure and vacuum moments that also occur in the cardiovascular system. As a result, the process creates harmony, which can also be described as zero point energy, since the opposing directions of rotation neutralize each other. The heart is not a pump, but a harmonic vortex chamber with zero point character and a guarantor for stability. Various substances, such as water, milk, beer, wine, juice, soy milk or mixed drinks, develop stable colloidal structures through the Bormia process (turning processes/inversion), which maximize bioavailability for every organism and produce a longer shelf life: structure = stability. These results are supported by organic mathematics (golden section), which is common to all vortex processes. Vortex processes are on the one hand cleansing and on the other hand restructuring or organizing, i.e. forming colloids. In order to describe complex processes, one can say that organic homogenization :

- Comminuted by rhythmic contractions between the pressure and vacuum moments (see figure), i.e. nanometrization of molecular chains, resolution of clusters and information structures,
- Subsequently forms large surfaces
- Rubs molecules together and into each other by increasing rotation, "merges" and reorganizes (organically ordered). They become colloidal by being turned inside out (invert) at the maximum point of rotation (see lemniscate in pic. 1). Stability can only occur if both directions of circulation balance or cancel each other out (this is equivalent to potentiation).
- With the Bormia Bio Spring-Water-Generator¹ a stimulation of the energy metabolism of the cells by over 70% was determined, which indicates a natural

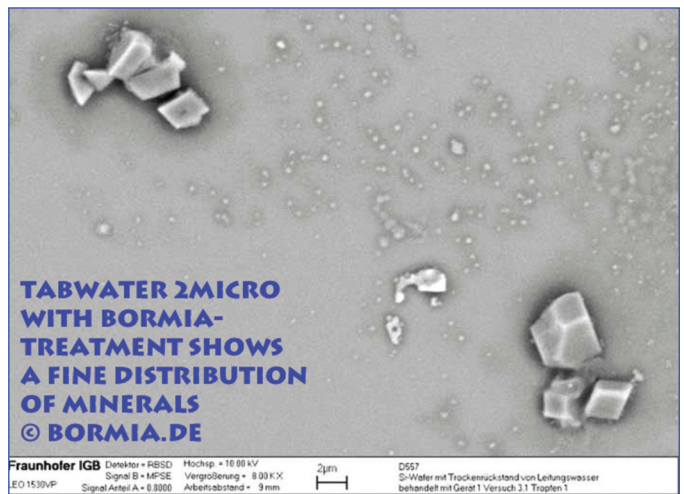
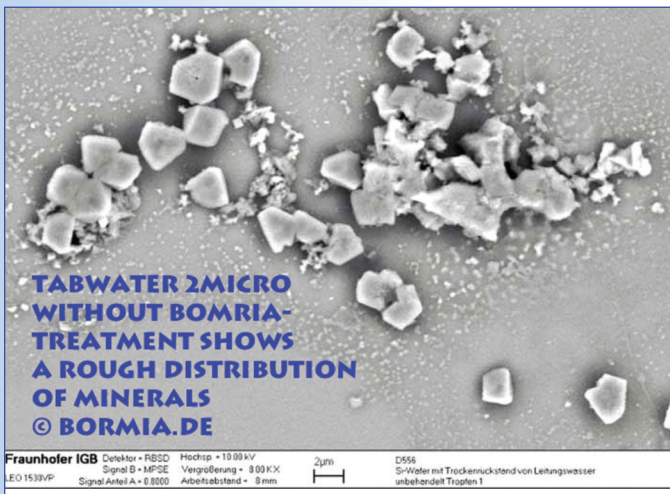
Organische & kolloidbildende Homogenisation Organic & colloidforming homogenization

Bormia®-Prinzip (Beschreibung)* Bormia®-principle (description)

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Zeichnung für Rechts- & Linkszirkulation
Drawing for reight- & leftrotation



Fluidmedium kann sein: Wasser, Milch, Saft, Wein, Bier etc., Mixturen davon und techn. Flüssigkeiten!
Fluidmedium can be Water, milk, juice, wine, beer, etc. mixtures of it and also technical fluids.



Scanning electron microscopy of tap water (Fraunhofer Institute, Germany)
 Picture left: 2 μ , water without Bormia treatment, coarse accumulations of the ingredients are visible.
 Picture right: 2 μ Picture with Bormia-treatment... there is a large separation of the ingredients (minerals).

correspondence of nature technology (bionics) with the organic world.

In comparison to conventional homogenization, this means that natural principles have a constructive and enriching effect in the processing process. Conventional-technical variants disassemble natural bio-photons (structural forces) and thus cause physiological degradation, which reduces the natural minimum storage life of the products, bioavailability and nutritional values. The bio-variant, on the other hand, produces a quality-enhancing fusion of fats, proteins and liquids to form a colloidal, highly structured (coherently) product. The product becomes coherent. Whereas in technical homogenization the colloidal is only seen as an order of magnitude of substances, organic homogenization is about the new symbiosis between chemistry (substance) & physics (energy), the union of both polarities. This causes an energetic increase of the substances. In practice, the cream of milk treated with Bormia continues to frame (cream) up, but by shaking it once, it is immediately equally distributed and becomes homogenous... In terms of taste, this form of homogenized milk is perceived as creamy or creamy milk.

In physics, dispersion is the dependence of a physical quantity on the frequency of a wave. In technically homogenized liquids, particle sizes with a diameter between approx. 1 and 1000 nanometers are visible in the optical microscope. The Bormia Bio-Homogenizer produces particle sizes up to 3,000 nm. The following pics explain themselves.

Pioneer of organic homogenization

This organic technology was first discovered by anthroposophical researcher and artist Paul Schatz (www.paul-schatz.ch). His works are based on the Oloid, which thematized 'inversion' as a/the principle of evolution. His technical device for this is the Turbola (www.wab.ch). P. Schatz joined the colloid research that had existed since the 1920s and expanded this pool of knowledge with his insights into the laws of nature. The Turbola is used very successfully in the pharmaceutical industry as a mixer without back mixing. The Bormia Bio-Homogenizer works according to the same principle. Inversion is, figuratively speaking, similar to a sock (if one holds it at a point on the toes) which is turned from the inside out. Schatz achieved this inversion through the 3D lemniscatic movement⁴, which is known as the universal symbol of harmony in mathematics. However, the Turbola mixer is not based on a dynamic natural rhythm, as in the

Bormia device. It is also limited to single batches of max. 1000 Ltr./kg and time-consuming. In comparison, the BIO homogenizer is a cost-effective and space-saving permanent process for liquids of all kinds, which is installed in the transport pipe (behind the pump) and does not require a separate process step. It is to be operated only with a constant 2.5^o bar.

Summary

The Bormia principle introduces a quantum leap in food processing technology. In the WIN-WIN concept, it serves manufacturers in terms of costs, space, production simplification, etc., retailers in terms of a longer minimum shelf life (enhanced germ stability) and consumers in terms of food quality. Jumps in innovation such as these are more frequently possible if our technology is oriented towards the development of natural principles in the sense of "understanding nature & copying nature" (Viktor Schauberger). The Bormia[®] Bio Spring-Water-Generator as well as the Bormia[®] Bio Homogenizer will sustainably enrich the production world.

References:

- 1 See: Innovations in Food Technology | May 2018 | edition 58 | www.innovationsfood.com
- 2 When the whirler is used in water treatment, the bio spring water generator produces a bluish lighter effect compared to untreated tap water. This is due to the nanometry of the substance and the information cluster (cleaning effect).
- 3 The natural processes are one process step... nature works according to the principle of generating a 'maximum return' with 'minimal effort' (MiniMax principle). Organic processes are highly efficient and do not cause collateral damage.
- 4 <https://en.wikipedia.org/wiki/Colloid>, <https://www.britannica.com/science/colloid>.

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Bionic spring-water-generator and its beneficial effects on human cells

First cell testing of natural water vitalization device (bionics as a 1:1 copy of nature). It was proven that compliance with the laws of nature in water revitalization corresponds optimally with human cells. It fits obviously like a key to a lock. Purely technical manipulations of drinking water up to now have not yet provided evidence of correspondence with cells.

Prof. Dr. Peter C. Dartsch¹, Klaus Jürgen (Nadeen) Althoff²

¹ Dartsch Scientific GmbH, D-49419 Wagenfeld, Germany ² Bormia, D-88696 Owingen, Germany

Background and question of this study

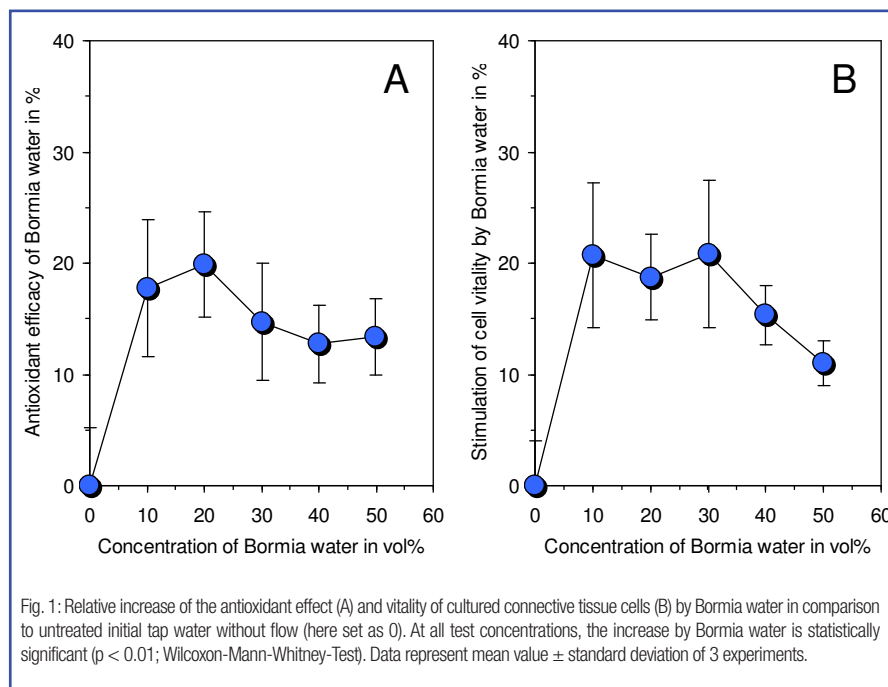
Water is a tasteless, odorless, and nearly colourless chemical substance that is the main constituent of most living organisms. From the strictly academic point of view, water is just H₂O and exists in three different phases, namely liquid state, solid state and gaseous state. Water possesses a number of unique properties which can be explained by natural science only in part.

From the metaphysical point of view, water is much more than just hydrating the body. When water is flowing in spirals and vortices and is continuously changing its state, the molecules organize themselves into structures, layers or clusters of energy which carry constructive information in form of vibration energy like a magnetic tape. If these are beneficial, they may be able to restore healthy resonance in the human body, as in homoeopathy. For more details, see Refs. 1-3.

In the present scientific study, current cell biological methods were used to investigate whether tap water, after passing through a single device from Bormia in form of rhythmic, left and right spinning spirals and an additional crystal waterfall (a device of stones and crystals like in a creek) has received and stored vibrational energy to possess beneficial health effects in direct comparison to the same pressure-damaged (means transport pressure above 2,5° bar) tap water without using the Bormia device.

Bormia product & tested waters

The Bormia Ananda 20 GS with gold/silver-coated, rhythmically left and right spinning spirals and with an additional crystal waterfall was used to improve the initial tap water in the investigations shown here in detail. The water used for the tests was either The Bormia Ananda 20 GS with gold/silver-coated, rhythmically left and



right spinning spirals and with an additional crystal waterfall was used to improve the initial tap water in the investigations shown here in detail. The water used for the tests was either tap water from D-83052 Bruckmühl or from D-88696 Owingen, each without filtration but nevertheless damaged by pressure about 4° Bar. For further information on the product, see <https://bormia.de/> and www.zero-point-energy-water.com

Examination of the antioxidant effect in a cell-free test system

In this cell-free test system, it was tested whether Bormia water is able to inactivate free oxygen radicals better than the initial tap water and, thus, prevent oxidative stress. The different concentrations of the two test waters, WST-1 (a water-soluble tetrazolium dye) were mixed. The reaction was started by the addition of potassium peroxide in Aqua dest. (1 mg/ml) and

the superoxide anion radicals in the reaction mixture, which were not inactivated by the test water caused a cleavage of the dye which was accompanied by a change in the optical density (= colour). The optical density was continuously recorded as a differential measurement $\Delta OD = 450 - 690$ nm on the Elisa reader (BioTekSLx808) and, after linear regression of the reaction curves, was evaluated in the form of the slope (ΔOD per min) and compared between the two test waters. The relative data for Bormia water in comparison to the tap water was finally evaluated.

As depicted in Fig. 1A, Bormia water increased the antioxidant efficacy by an average of about 15% and a maximum of 20% when compared with the initial tap water. As a matter of fact, more free reactive oxygen radicals can be inactivated so that the body's own mechanisms to neutralize reactive oxygen radicals are strengthened when Bormia water is taken regularly.

Cell cultures of connective tissue cells

The investigations were performed with connective tissue fibroblasts of cell line L-929 (ACC-2; Leibniz Institute DSMZ - German Collection of Microorganisms and Cell Cultures, Braunschweig, Germany) and used in the sub cultivation stages (passages) 50 to 52. Cells were

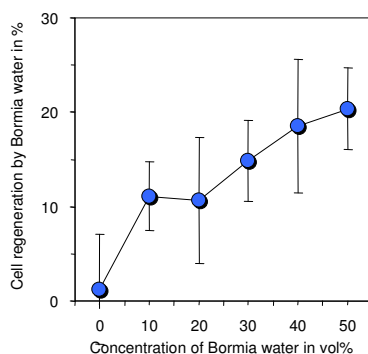
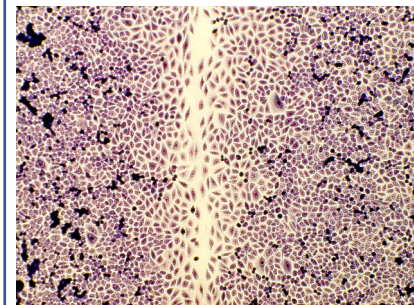
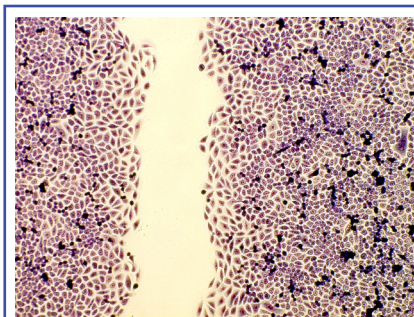


Fig. 2: Micrographs of cultured connective tissue cells to illustrate cell regeneration. (Upper picture) Migration of cells into a cell-free space within 2 hours after removal of the silicone insert and (middle picture) after 24 hours of continuous incubation with extensive recolonisation of the cell-free space. (Lower picture) Stimulation of cell regeneration by Bormia water compared to untreated initial tap water (here set as 0). At a Bormia water concentration ≥ 30 vol% the increase becomes statistically significant ($p < 0.01$; Wilcoxon Mann-Whitney test). Data represent mean value \pm standard deviation of 3 experiments.

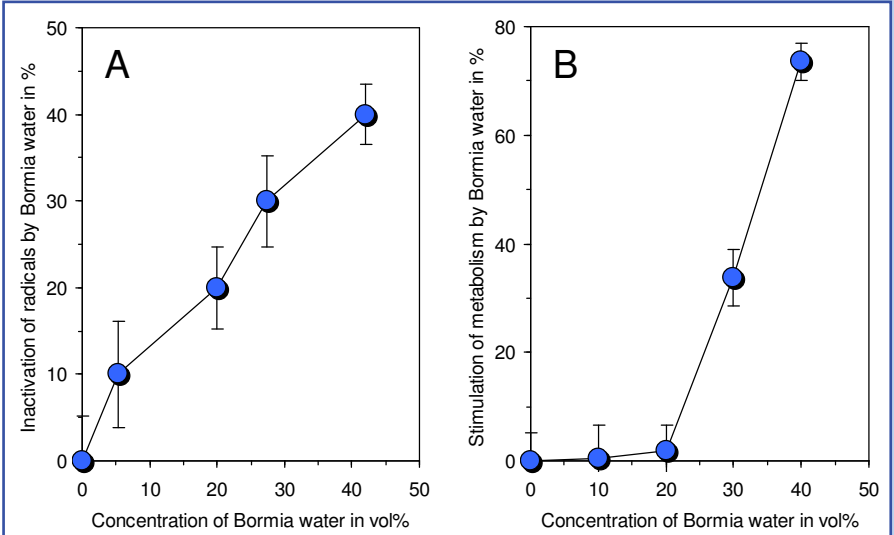


Fig. 3: (A) Relative inactivation of endogenously generated superoxide anion radicals by Bormia water in comparison to the initial tap water without flow (here set as 0). At all concentrations of Bormia water ≥ 20 vol% the increased inactivation is statistically significant ($p < 0.01$; Wilcoxon-Mann-Whitney test). Data represent mean value \pm standard deviation of 3 experiments. (B) Relative stimulation of the energy metabolism of adherent HL-60 cells within 180 min after application of Bormia water in comparison to the initial tap water without flow (here set as 0). Activation is statistically significant at all concentrations of Bormia water > 20 vol% ($p < 0.01$; Wilcoxon-Mann-Whitney test). Data represent mean value \pm standard deviation of 3 experiments.

routinely grown in RPMI 1640 with 10% foetal calf serum and 0.5% of gentamycin and incubated at 37°C in a humidified atmosphere of 5% CO₂ and 95% air.

Examination of cell vitality

For the experiments, the cells were seeded from mass cultures at a cell density of 20,000 cells/well in 96-well plates (200 μ l culture medium/well) and incubated for 24 h to achieve cell attachment and metabolism.

Then, medium was changed and the different water concentrations of both waters were added. After 24 h of continuous exposure, culture medium was aspirated and replaced by 180 μ l of fresh culture medium containing 20 μ l XTT. The optical density of each well was measured after 0 min and after 120 min at 37°C as a differential measurement at $\Delta OD = 450 - 690$ nm on the Elisa reader (BioTEK Elx 808) and compared between the two test waters. The relative data for Bormia water in comparison to the tap water was finally calculated.

XTT is the sodium salt of 2,3-bis[2-methoxy-4-nitro-5-sulphophenyl]-2H-tetrazolium-5-carboxyanilide and has a yellowish colour. Mitochondrial dehydrogenases of living cells cleave the tetrazolium ring of XTT and orange stained and water-soluble formazan crystals are formed. The intensity of the orange colour of the reaction solution is proportional to the cell vitality and is determined photometrically.

When compared to the untreated tap water without flow, Bormia water caused a statistically significant increase in cell vitality by about 20% ($p < 0.01$; Wilcoxon-Mann-Whitney-Test; Fig. 1B). Although this increase in cell vitality was reduced at concentrations > 30 vol%, it was still significantly higher than the initial tap water. This stimulation in cell vitality might cause a higher physical performance and an improved well-being in humans.

Examination of cell regeneration

An improvement in cell vitality is usually coupled with a stimulation of cell regeneration. In this process, proliferation and migration of the cells is a key event at the cellular level. In order to investigate whether Bormia water can also stimulate cell regeneration, the cells were seeded at a density of 50,000 cells/ml into the three cell culture compartments of silicone Culture-Insert 3 Wells (ibidi, Martinsried/Munich, Germany) which have been carefully placed on the surfaces

in each well of a 12-well plate. The cell culture reservoirs are separated by a 500 μ m thick wall. Due to their especially designed bottom, the inserts stuck to the surface firmly and completely prevented any cell growth under the walls.

Cells were cultured until a dense cell layer was achieved and the inserts were removed to leave sharp cell-free gaps (artificial wounds) without any cells. Cells began to migrate and proliferate into the cell-free space in order to close the wound (Fig. 2). After 24 hours, cells were fixed with methanol and stained according to Coomassie-Giemsa, air-dried and the width of the remaining wound was measured. For each test concentration of the waters 18 measurements were performed in triplicate experiments and the relative cell regeneration in comparison to the untreated tap water was calculated.

As depicted in Fig. 2, Bormia water showed a dose-dependent stimulation of cell regeneration with a maximum of 18% at a test concentration of 50 vol% of Bormia water. All test concentrations ≥ 30 vol% were statistically significant ($p < 0.01$; Wilcoxon-Mann-Whitney-Test) from the initial tap water. The results clearly demonstrate that Bormia water also promotes the cell regeneration process when taken regularly.

Cell culture with HL-60 cells

Description of cells and routine cultivation

The second set of experiments presented here were done with promyelocytes of the cell line HL-60 (ACC-3; ECACC 98070106; Leibniz Institute DSMZ - German Collection for Microorganisms and Cell Cultures, Braunschweig, Germany). The cells were routinely cultured in RPMI 1640 with 10% foetal calf serum and 0.5% gentamycin and incubated in an incubator at 37 °C and in a humid atmosphere of 5% CO₂ and 95% air. The cells were routinely cultivated in suspension and subcultured regularly on every third day.

Under specific conditions such as cultivation in medium with 1.5% dimethylsulfoxide for 5 to 7 days, HL-60 cells differentiate into so-called functional neutrophils which possess the properties of phagocytic and inflammatory cells (neutrophil granulocytes) in the blood. Besides their phagocytic activity in the blood against penetrated microbes, cells may also penetrate a pre-damaged tissue area and generate reactive superoxide anion radicals. This oxidative or

respiratory burst may cause further cell damage and keep a chronic inflammatory process going.

HL-60 cells can also be grown in adherent state which allows to examine their energy metabolism and to evaluate the test substance's potential to act on the primary unspecific defense mechanism in the blood.

Potential for neutralizing endogenously formed radicals

HL-60 mass cultures were differentiated into functional neutrophils by treatment with dimethylsulfoxide. After several washing and centrifugation steps, the cells were stimulated to form superoxide anion radicals by addition of a phorbol ester. The generated radicals caused a cleavage of a tetrazolium dye WST-1 (Roche Diagnostics, Mannheim, Germany), which was also added to the reaction mixture. The stronger the cleavage of the dye and thus also its change in optical density, the more radicals were generated by the cells and present in the reaction mixture. If the radicals were inactivated by Bormia water, the optical density changed less strongly. The optical density was continuously recorded on the Elisa reader (BioTek SLx808) as a differential measurement $\Delta OD = 450 - 690$ nm and evaluated after linear regression of the curves (10 to 30 min). The results were calculated as relative values in comparison to the tap water.

As shown in Fig. 3A, the flow of water through the Bormia Ananda 20 GS with gold/silver-coated, left and right spinning rhythmical spirals and with an additional crystal waterfall caused a pronounced and dose-dependent inactivation of superoxide anion radicals which were generated endogenously by functional

neutrophils. At all concentrations of Bormia water ≥ 20 vol% the increased inactivation was statistically significant ($p < 0.01$; Wilcoxon-Mann-Whitney test). The radical inactivation helps to reduce oxidative stress, but also might positively act on local chronic inflammatory processes which coincide with an enhanced level of radicals.

Energy metabolism of adherent HL-60 cells

HL-60 cells can also grow adherently after differentiation and can be examined for their activity without oxidative burst. For this series of experiments, adherently growing HL-60 cells were seeded at a density of 20,000 cells/well into 96-well culture plates and incubated for 24 h. Thereafter, reaction mixtures consisting of phosphate-buffered saline with calcium and magnesium and 5 mM glucose, the two test waters (Bormia water and tap water) and the tetrazolium dye WST-1 were added. The optical density was continuously recorded as already described before. After linear regression of the curves (time interval 10 to 80 min). The results of Bormia water were calculated as relative values in comparison to the initial tap water.

Fig. 3B demonstrates that Bormia water was able to stimulate the energy metabolism of adherent HL-60 cells within 180 min after application when compared with the initial tap water without flow. However, the stimulation was only examined at test concentrations > 20 vol%, but then became very prominent.

Conclusions

In the experimental animal-free tests performed here with connective tissue cell

cultures and differentiated HL-60 cells, the bionic Bormia Spring-Water-Generator working as a 1:1 copy of nature has demonstrated its beneficial effects when compared with the initial pressure-damaged tap water without Bormia treatment. Therefore, from our experiments, the regular intake of Bormia water can be highly recommended for the improvement and maintenance of well-being.

References:

- 1 Bartholomew A (2010): The Story of Water. Floris, Edinburgh.
- 2 Bartholomew A (2011): The Spiritual Life of Water: Its Power and Purpose. Park Street Press.
- 3 Pollack GH (2013): The Fourth Phase of Water: Beyond Solid, Liquid, and Vapor. Ebner & Sons.

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HALF PAGE ADVERT

Natural engineering/bionics

elements of natural water treatment

- meandering or rhythmic right & left swirls,
- clear principle oriented towards harmony,
- ordering, centripetally (inwardly) rolling water movement,
- Development of natural rhythmic pressure & vacuum moments,
- Acceleration a reversal at zero point (zero point water),
- high dynamic input,- natural information input (e.g. via stones),
- Logarithmic Mathematics (Golden Section)

EFFECTS:

- dynamic harmony is zero point force (i.e. high energetic potential)
- Surface formation (potentially high information uptake & transmission),
- Increased solvability (absorption of substances),
- soft water (no matter how many minerals are present),
- highest bioavailability (also of minerals),
- natural germ resistance due to high vibration potential,
- natural cleaning & deletion of old information clusters through vortex forces (the higher the vortex the more effective are the results to water),
- natural swirls create rhythm (see breath & heart rhythm),
- natural rhythms cause lasting stability in the water,,
- Formation of naturally hexagonal structures (water = a liquid crystal),
- Colloid formation* only occurs through harmony/zero point forces,
- natural ionization,
- In the sum, an organic water is created...

Bionics... creates living water that is always colloidal*!

Colloids are highly bioavailable (organic) substances, which originate by a symbiosis of material and energy.

VS.

Classical engineering

elements of technical water treatment

- technical magnetism,
- high pressure (between 2,5 and 7.000 bar),
- modulation of frequencies without harmonic basis (mono & standard frequencies from the Internet),
- UV treatment, ozone, chlorine etc. (killing of the microbiome = disinfection),
- Reverse osmosis (removal of minerals with subsequent remineralisation),
- PH manipulation by technical ionization,
- Salt systems for decalcifying water (sodium input),
- Various combinations of these methods,
- Use of Arithmetic (non'rhythmic as a mathematical basis) and many more.

EFFECTS:

- Technological manipulations are not compatible with organic life:
- low bioavailability, latent dehydration, low supply and disposal of the metabolism (latent metabolic problems) etc.,
- dominance of artificial information ,
- no deletion of old information (cluster)
- no surface formation (no depth of information, low solubility of matter),
- no natural hexagonal structure (technical deformation),
- no natural energy transfer into the body,
- disharmonious water, as there is no right and left vortex
- no natural, pulsating rhythm input,
- no zero-point-energy quality
- no organic water...

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Man originates from water & carries the laws of water within himself.
He is an organic system..., he is not a 'technical recycling facility'!

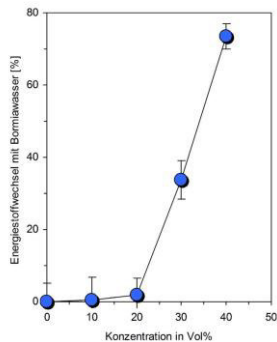


Fig. 1 shows an up to 80% increase in the energy metabolism of the cell through the addition of Bormia water at a concentration of 40 vol%.

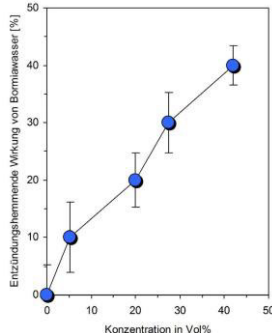


Fig. 2. shows the anti-inflammatory effect of Bormia water on cell culture.

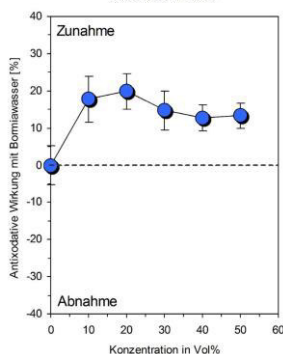


Fig. 3 Relative improvement/increase of the antioxidative effect by Bormia water. Antioxidants have a great physiological significance due to their effect as radical scavengers (radical buffering). They inactivate reactive oxygen species (ROS) in the organism, whose excessive occurrence leads to oxidative stress, which is associated with aging and the development of a number of diseases. So far, as far as I know, water as such is not yet known in science as an antioxidant.

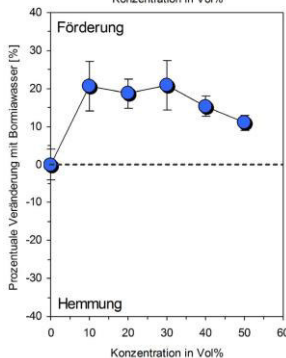


Fig. 4 Relative promotion of cell vitality by Bormia water. This increases rapidly by > 20% already at a concentration of 10%. Cell vitality determines the health of the organism; it is the capital of the body. The vitality of the cell is also determined by the ability to absorb vitamins, minerals, trace elements, essential fatty acids, essential amino acids and many other vitamin substances and to release the resulting waste products.

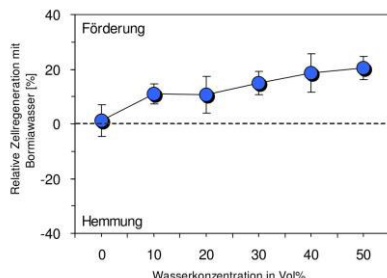


Fig. 5. shows the cell regenerating effect of cell culture by Bormia water by > 20%. Physiological cell regeneration is the replacement of dead biological cells by new ones. This includes both wound healing and general cell renewal.

[TO BORMIA SHOP](#)

Originals of the summary of the tables from 2 investigations by Dartsch Scientific GmbH - Institut für cell biological test systems On the Voßhardt 25, D-49419 Wagenfeld, www.dartsch-scientific.com Certification certificates dated: 26 January 2018 and 18 March 2018

The same water was certified as follows by the International Institute for EMC Research (Electro Magnetic Compatibility on Biophysical Basis) Ringstr. 64, 3500 Krems/Donau (Austria):
 "The BORMIA treatment exerts an influence on almost all central bodily functions as well as on various psychological, cognitive and mental functions, predominantly via the superordinate centres of central control".

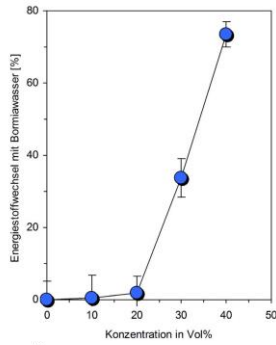


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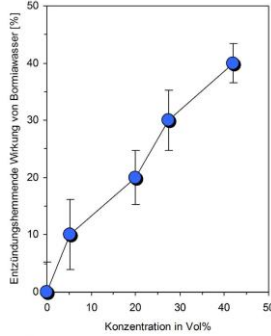


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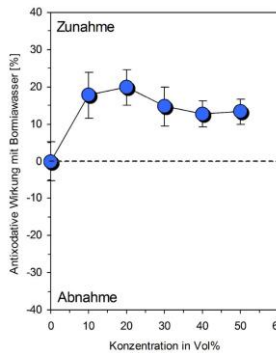


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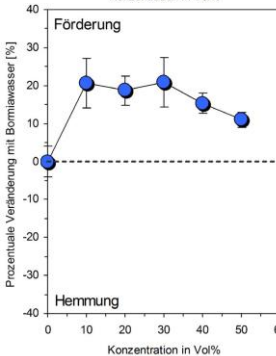


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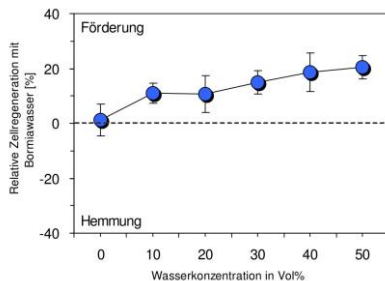


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