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Oxygen therapies

Activating and energising water-saturated inhaled air

The Airnergy principle – review and original data

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**The familiar oxygen therapies use highly concentrated oxygen (approx. 96 % O₂)
with flow rates of at least 2 - 15 l/min:**

Oxygen with medical neutral oxygen (pulmonary disease)	Oxygen/ozone therapies (according to Wolff)
Oxygen multistage therapies (according to M. v. Ardenne)	Haematogenous oxidation therapy (according to Wehrli)
Oxygenation therapies (according to Regelsberger)	UV therapy with patient's own blood (not oxygenated); (according to Wiesner; UVB D radiation modified according to Dehmlow)
All these methods are now regarded as doping.	

Main indications

- | | |
|---|---|
| <ul style="list-style-type: none"> • Conditions involving disrupted blood circulation, especially microcirculation | <ul style="list-style-type: none"> • Inflammatory conditions of varying origin, including septic processes, especially conditions caused by non-specific cellular immunodeficiency |
|---|---|

Individual indications

Disorders of the vascular system <ul style="list-style-type: none"> • arterial occlusive disease in various locations and of varying degrees of severity <ul style="list-style-type: none"> - peripheral occlusive disease - coronary circulatory problems (stenocardia, postinfarction syndrome) - cerebral circulatory problems - circulatory problems in the ocular fundus • Venous disorders <ul style="list-style-type: none"> - thrombophlebitis, thrombosis - postthrombotic syndrome - ulcus cruris 	Kindney disease <ul style="list-style-type: none"> - acute and chronic inflammation
	Joint disease <ul style="list-style-type: none"> - arthritis and arthroses
	Metabolic disorder <ul style="list-style-type: none"> - hyperlipaemia - diabetes mellitus - uratic arthritis
	Skin disease <ul style="list-style-type: none"> - chronic excema - psoriasis - severe burns with resulting complications
Liver disease <ul style="list-style-type: none"> - acute and chronic disorders of varying origin 	Bacterial and viral infection <ul style="list-style-type: none"> - bacterial and viral pneumonia - boils - septicaemia

Other indications

- | | |
|------------|--|
| - migraine | - pre- and post-operative preventive treatment (Dehmlow 1991-2009) |
|------------|--|

These indications are also covered by the "ionised oxygen (ion. O₂)" method according to Engler (2004) in which positive and negative oxygen ions are produced externally in a dry oxygen flow.

The Airnergy principle

The Airnergy principle is a patented method for producing singlet oxygen (1) with the excitation energy subsequently being released in the moist air (2). The principle involves activation of the oxygen and also energising of the water-saturated inhaled air. However, this is not connected in any way with (familiar) oxygen therapies: Airnergy AG uses the oxygen contained in normal air (e.g. 4 l/min air flow) in its devices and not pure medical oxygen. It is important here that the (claimed) effects are not attributable to the air or the oxygen it contains.

This becomes evident if the results shown below for Airnergy devices with the energising procedure switched on (test device) and switched off (placebo device) are compared: the air flow is the same in both cases.

The effect can only be attributed to the additional "energising effect". Investigations into this phenomenon were conducted using the "double blind" method. This also provides evidence of the "energising effect".

Biophoton analysis: principle of the method

Measurement is backed by the idea stated by Erwin Schrödinger that the quality of foodstuffs is not based purely on the composition of their constituents or calorific properties but on the ability of food to organise consumers (3). This "negentropic" function of food is connected to the capacity to store light. Consequently the quality of food, when left in its natural state, can be seen (4). Biophotonics exploit this connection by measuring "delayed luminescence", the after-glow of food after defined exposure to light.

This method has been patented throughout Europe (5). The re-emitted light emission is recorded in total darkness with maximum sensitivity light sensors and best possible reproducibility (of just a few percent of the reading) dependent upon reemission time, possibly for various wavelengths in the visible spectral range or even for white light. The characteristics of luminescence relaxation are clearly recorded in the form of adapted analytical functions.

Air – PMS1 test procedure: air through water

The spontaneous emission of 7 ml water in a quartz glass vessel, into which air could be blown through a silicone tube, was measured over a three minute period with a temporal resolution of 50 ms. Each measurement was repeated three times to allow external influence on results to be compared for the various devices. Air from two different devices (referred to as "X" and "XX") was tested; both devices were the same construction. Moreover it was not known during the test which device was the original Airnergy device and which the placebo device. This ensured that photon analysis was viewed neutrally.

During the first attempts water was lost when it sprayed out of the measuring vessel which could explain the drop in photon emission with the devices switched on. In addition a drop in photon emission with the devices switched off (first three columns) was noticed. This was unexpected as the sample was supposed to have given off all the stored photons within the dark adaptation time. Possible explanations were contamination of the water, of the vessel or of the

tube, resulting in slowly declining chemical reactions with photon emission. To take account of these effects, a trend line of the maximum readings per test series was included in the graphs.

To determine the effects of the different devices, after taking dark measurements air from one device and then from the other was passed through the same water. The order was then reversed (6).

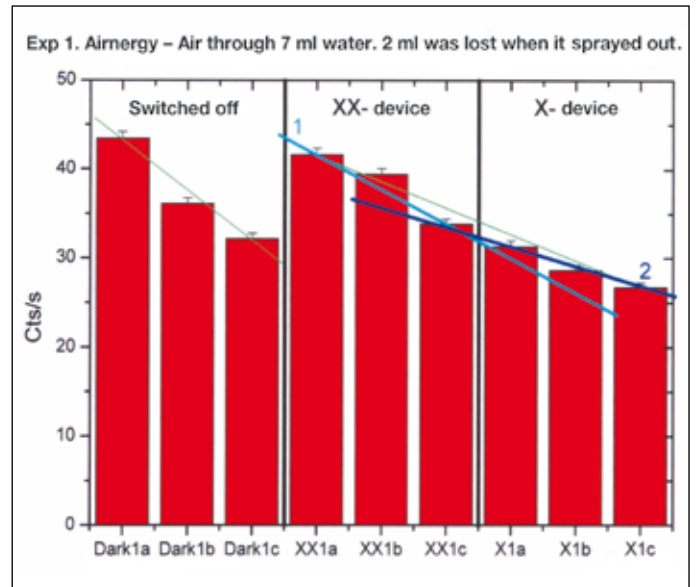


Figure 1: Air – Airnergy experiment 1. a) switched off b) device "XX" c) device "X".

Figure 1 illustrates the first test series. The first three columns reproduce the effect of the declining emission described above. The next three columns show the mean values and standard errors for photon emission when air from "device XX" was passed through the water. Compared with the values resulting from passing air from the "X" device (last three columns) through the water, it is noticeable that the second measurement (after 3 minutes) with the "XX" device deviates from the (blue) trend line by being higher. This indicates a higher chemical and energetic activity level for the air from the "XX" device (active Airnergy device) in water (7).

There are many varied subsequent physiological and biochemical reactions as well as reactions which are relevant to medicine and laboratory investigations (8).

Theoretical background

All higher organisms rely on a constant supply of oxygen:

- This is required for internal metabolic processes and external actions.
- It is important to have the right amount at the right time at the right place and this is achieved by the active regulatory mechanisms, respiration, circulation, diffusion and metabolism.
- So it is not just the oxygen supply itself but also its distribution within the organism as well as its utilisation which determine whether optimal conditions exist and can be maintained for energy production, immunological response, neutralisation of radicals and cell mitogenesis.

- In this context research focused increasingly on „energising“ inhaled air.

- In subsequent years many factors ranging from the production of energised air to the effects on mitochondrial metabolism were analysed, not least by Soviet and Russian scientists.

- Significant elements of the cognitive process must remain hypothetical for the time being however since although, viewed logically, they could in theory be reproduced, in practice, this has not been proven.

- The original assumption was that molecular oxygen is inert and that shortterm activation should therefore not only increase its reactivity in clinical in-vitro experiments but in living organisms.

- This can take place through the production of singlet oxygen, the stimulated but non-radical form of oxygen.

- Airnergy is a method of briefly energising molecular oxygen from the outside air (inhaled air) into the active singlet state requiring a photosensitiser, light and oxygen.

- This active state only lasts for fractions of seconds however before the active oxygen reverts to its normal state.

- This process releases oxygen which is delivered to the surrounding water droplets through which the inhaled air is directed.

- The processes occurring up to this stage have been well documented by a number of studies emanating from Soviet Russia in particular.

- The fact that singlet oxygen is not inhaled as its half life is much too short has also been successfully proven.

- So what is inhaled is atmospheric oxygen, as would be the case if Airnergy had not been used.

- Airnergy is not therefore a special form of oxygen therapy and is consequently not considered doping as far as competitive sports are concerned.

- In addition to inhaling atmospheric oxygen, „energised water“ is supplied when using Airnergy, just as water droplets are mixed with „normal“ air.

- The air inhaled when using Airnergy is saturated with water vapour to transfer as much „energy“ as possible.

- This aspect has also been scientifically proven.

- Our own experience shows that drinking „energised“ water after the breathing session also reinforces the effect of Airnergy.

- From here we enter a definite „grey area“ of hypotheses which

certainly describe the continuing transfer of energy into the mitochondria without so far being able to demonstrate this precisely through the results of practical studies.

- Relevant studies have been initiated but not yet completed however.

- It has been successfully proven in individual cases that singlet oxygen or the energy released in the reversion to the normal state considerably improves the ability of erythrocytes to release oxygen.

- The energy obviously produces an increase in 2,3-diphosphoglycerate in the erythrocytes, leading to a shift to the right in the oxygen binding curve, synonymous with the fact that, at the same oxygen partial pressure in the erythrocytes, oxygen saturation is reduced and oxygen release to the tissue, i.e. into the individual cells and there into the mitochondria, the site of vital ATP generation, is improved. To sum up, oxygen utilisation is improved.

- How the energised water in the inhaled air brings about this process of proliferation of 2,3-diphosphoglycerate remains unclear for the time being however, although preliminary hypotheses have been formulated and relevant study sets prepared.

- The improved utilisation of oxygen in the mitochondria is the reason behind the virtually ubiquitous use of Airnergy in preventive treatment, therapy and rehabilitation.

- Airnergy is indicated as a supportive basic therapy for many disorders as it leads to harmonisation of the autonomic nervous, hormonal and immune systems (9).

Effect on laboratory investigation parameters and on lactate formation

Pathological laboratory parameters revert to normal. This corresponds to intense aerobic oxygen utilisation in the mitochondria with reduced lactate formation (fig. 2) and an increase in the aerobic/anaerobic lactate threshold. Amongst other things, this is relevant for improved endurance in sport, for example acting upon heart rate variability [fig. 3 (10)]. This corresponds to economising of the autonomic nervous system and of the cardiovascular system.

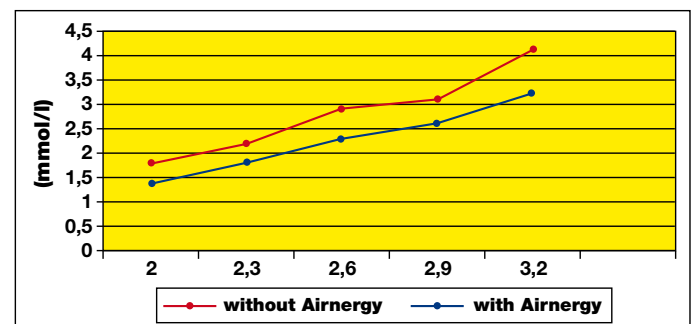


Figure 2: Examination of the mean differences between the test and placebo group. Lactate concentration (mmol/l), treadmill with and without Airnergy (n=15), used at least 60 minutes prior to exertion.

In this way it was established that mean heart rate (HR) changed by $p < 0.001$. In addition significant changes occurred in the autonomic nervous system, more particularly for the low frequency (LF) ($p < 0.001$) and high frequency (HF) ($p < 0.001$) parameters. When examining LF/HF the significance was $p = 0.019$. No differences between the two groups could be detected for the parameters pNN50 and RMSSD. Further examination of the individual measurement points revealed significant changes between measurement points 2 and 3 for the parameters LF ($p = 0.011$), HF ($p = 0.006$) and LF/HF ($p = 0.026$) as well as for mean HR between measurement points 1 and 2 ($p < 0.001$) and 1 and 3 ($p = 0.015$). In addition parameters such as stress value, state and pNN100 were measured for the Vicardio®.

No significant changes were detected however when analysing variance. The results tended to be comparable for data recorded with the Vicardio® (Hottenrott, 2009).

Discussion & conclusions

The significantly greater high frequency element during the intervention phase with the test device, compared with the placebo device, and the subsequent drop in the high frequency element with the simultaneous drop in the low frequency element in the post-test phase, indicate an acute vagal effect from the activated („energised“) inhaled air on autonomous regulation for the duration of the intervention (Hottenrott, 2009).

A strong vagal stimulus is relevant to health and leads to economising of cardiac activity. The increase in rhythmicity in the heart beat sequence is considered linked to greater stress tolerance and stable health. These effects which were evident following 21 minutes' use of Airnergy by sports students, are probably more marked in people who are exposed to severe stress at work or in their family environment. In other words: the effect should be greater in stressed people. However, stress reduction can be achieved through different forms of intervention, which are generally more involved and costly though. In sport a vagal initial condition is significant for subsequently adapting functional capacity (11).

The physiological interdependency is not yet clear. Various scenarios can be debated here. The energised inhaled air may bring about changes in autonomous regulation directly through central mechanisms or through various receptors. This question can only be clarified through extensive basic scientific research. The issue of the sustainability of the effect is also open to debate. Further investigations are required to determine whether repeated inhalation with the Airnergy+® system has a lasting effect on the autonomic nervous system (12).

Concentrated oxygen and activated inhaled air: comparison between the physiological effects of two inhalation methods

In this study conducted on healthy subjects (13), 19 subjects inhaled air for 20 minutes which had been prepared using Airnergy technology. At the end of this respiration period a significant reduction in the amount of oxygen in the exhaled air, a significant improvement in peak flow and a significant reduction in respiratory and pulse rate were observed compared with the initial values. This was evidence of improved oxygen utilisation reflected in better me-

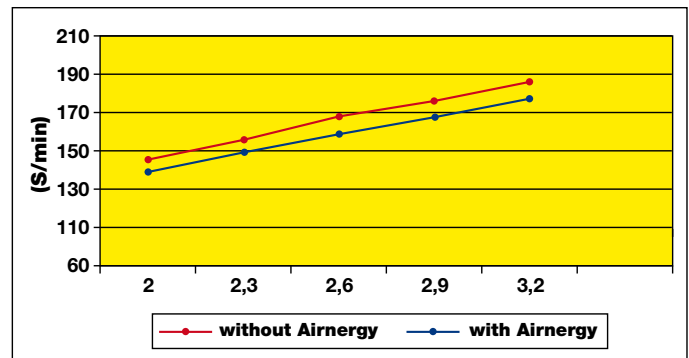


Figure 3: Heart rate pattern, treadmill with and without Airnergy (n=15), used at least 60 minutes prior to exertion.

tabolic quality and ability to regulate. However the same subjects derived no benefit from inhaling concentrated oxygen which was carried out previously under the same conditions.

Work is currently ongoing into presenting the entire cause and effect chain.

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- (1) Nachweis [evidence]: Patent and Briviba report (test record)
- (2) Nachweis [evidence]: Popp's test record
- (3) E.Schrödinger: What is Life? Cambridge University Press, London 1945, see also: F.A.Popp: Die Botschaft der Nahrung [The message of food]. Zweitausendeins, Frankfurt 2004
- (4) S. Diemair: Lebensmittelqualität. Ein Handbuch für die Praxis. [Food quality. A practical manual], Wissenschaftliche Verlagsgesellschaft mbH, Stuttgart 1990
- (5) EP 0430 150 B1
- (6) International Institute of Biophysics (Drexel, M. and F. A. Popp)
- (7) These experiments were conducted using the double and triple blind method and comparing the test (activated) Airnergy device with the placebo (non-activated) Airnergy device
- (8) according to Jung
- (9) Jung, 2008
- (10) Nachweis [evidence]: Wienecke study (2008), Hottenrott study (2009)
- (11) Hautala et al., 2008
- (12) Wienecke presents similar data (2009)
- (13) C. Schöllmann (2004)

Further information and literature:

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