BUCHINGER WILHELMI

FASTING
INTEGRATIVE MEDICINE
INSPIRATION

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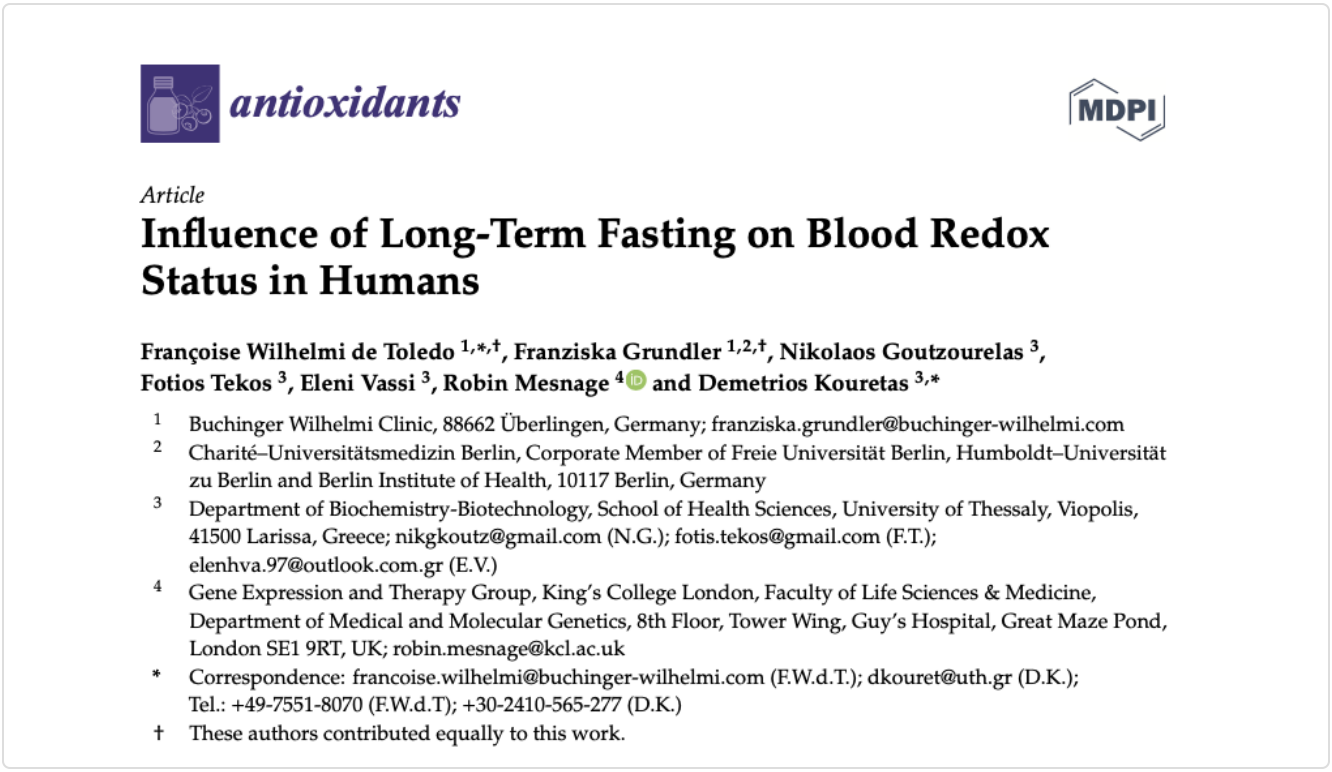
Dear John Doe,

We thank you for your participation to the "Detox study" and proudly communicate that the first part of our results has been published in the journal *Antioxidants*. This study revealed that the oxidative stress decreased during a 10±3 day fasting that you spent at the Buchinger Wilhelmi Clinic in the period from September until December 2019, and that the antioxidant machinery was stimulated. This is of course extremely positive.

We had promised to give you a personal report and this is what you find enclosed. On the graphs you will see the values of the whole group and highlighted in red your value at the beginning and the end of the fasting with a short comment. We are thankful for your contribution to these valuable scientific results and ask you to keep the data confidential until the 2 next publications that we are planning are released.



antioxidants

MDPI

Article

Influence of Long-Term Fasting on Blood Redox Status in Humans

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Figure 1: Influence of Long-Term Fasting on Blood Redox Status in Humans. A full version of the study is available online at https://www.mdpi.com/2076-3921/9/6/496

1/ What is oxidative stress?

First of all, a little recall: Oxidative stress is produced when free radicals, also called reactive oxygen substances (ROS) are produced in such quantities that the defense mechanisms, the antioxidant machinery, are overwhelmed and cannot prevent damages of the body lipids, proteins, membranes and even to the DNA.

Normal processes like cell respiration, moderate sun exposure or inflammation lead to the physiological production of ROS. Toxic influences like smoking, all types of environment pollutions, or drugs, as well as ionizing radiations for instance radioactivity will lead to a massive pro- duction of ROS and cell damages.

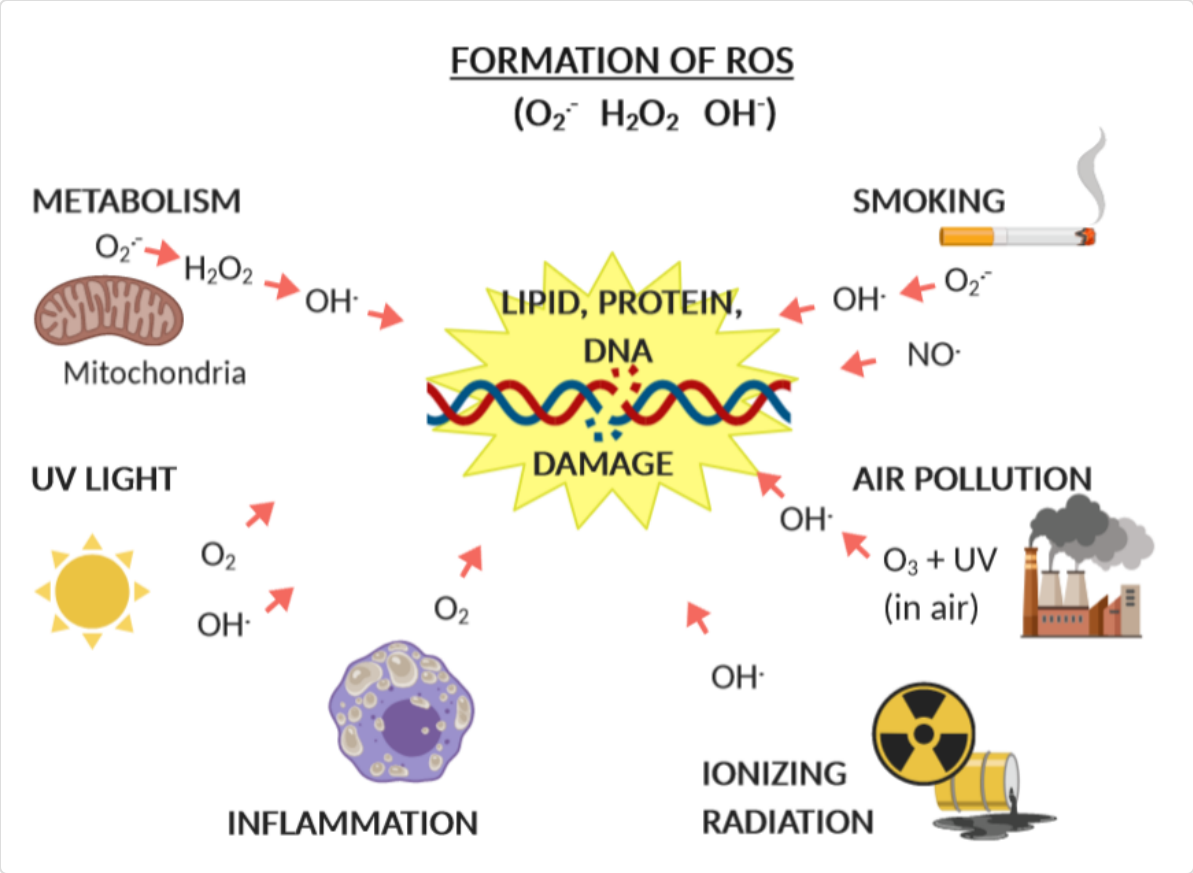

Figure 1: Formation of reactive oxygen substances (ROS): 02-, H2O2, OH-. This figure was created with Biorender.com. © Buchinger Wilhelmi 2020.

ROS in moderate quantity has the useful effect of stimulating the immune system, regulating gene transcription, to activate the antioxidant machinery of our cells. However, excessive and/or prolonged increase in ROS production can cause damages in brain, heart, kidney, skin, joints, immune system, blood vessels, lung, eyes. It has been implicated in the pathogenesis of cancer, diabetes, atherosclerosis, neurodegenerative diseases, rheumatoid arthritis and stroke. In addition, ROS seem to strongly accelerate the process of aging.

Antioxidants:

- Intrinsic: several enzymes like Superoxide dismutase (SOD), catalase, Glutathione (GSH), Glutathione reductase (GR), Glutathione Peroxidase (GPx), as well as uric acid and many others (Vitamin C, A, E).
- Extrinsic: Vitamins C, A, E. Foods like blueberry, apples, tomatoes, strawberries, broccoli, nuts, lemon, rose hip, green cabbage, pomegranate.

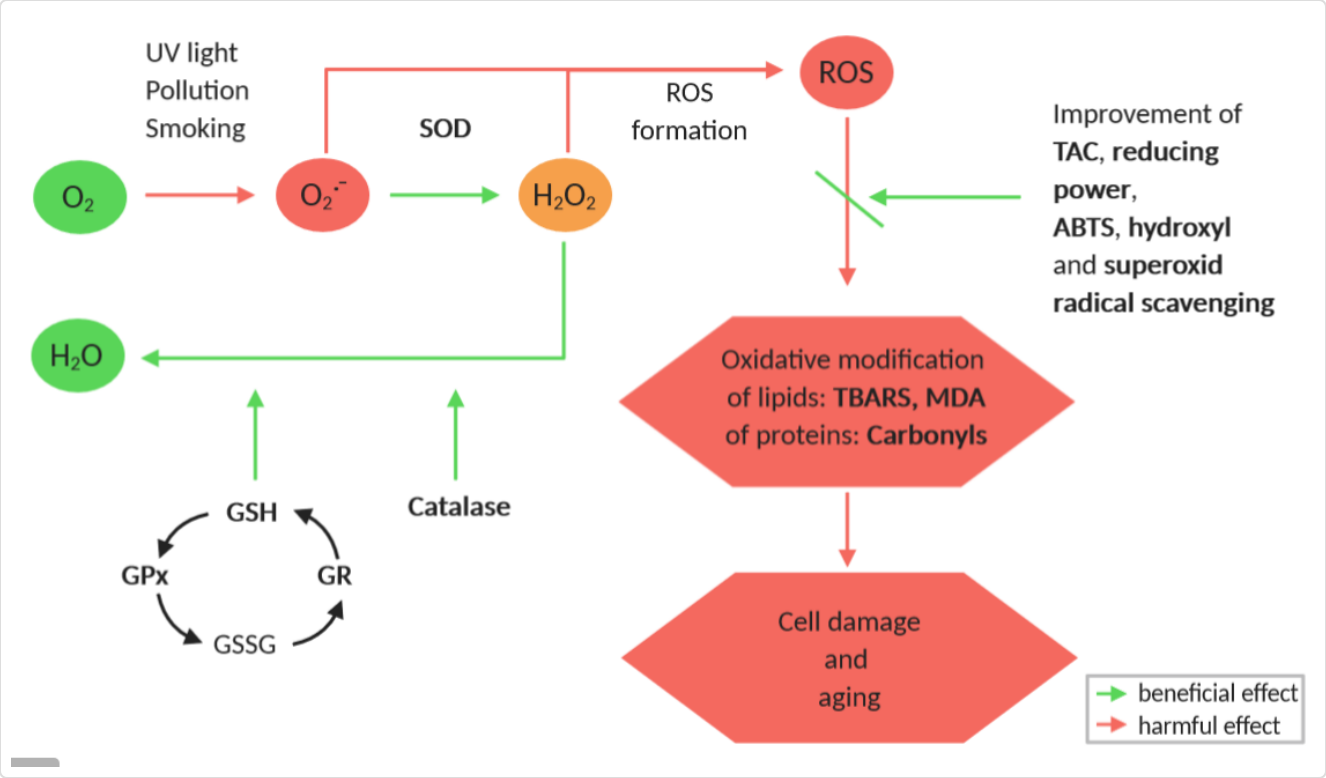

Figure 2: Antioxidant mechanisms and cellular damage from ROS.

In our study we also measured the total antioxidant capacity (TAC), the reducing power as well as hydroxyl radical, superoxide radical and ABTS scavenging which are several markers trying to quantify with different methods the total amount of antioxidants circulating in the human blood. Each parameter estimates this antioxidant capacity.

TBARS and MDA are two markers of lipid peroxidation (damage to lipids). Elevated values indicate oxidative stress and have been associated with obesity and metabolic disorders. Decreased values like at the end of fasting are linked to better metabolic health. Carbonyls reflect protein damage.

Glutathione and related enzymes GR and GPx are capable of preventing damage to important cellular components caused by ROS. In our study, they cannot be individually interpreted. These measurements are still experimental and we can only provide you with an approximation of the interpretation of your results.

2/ Your personal profile

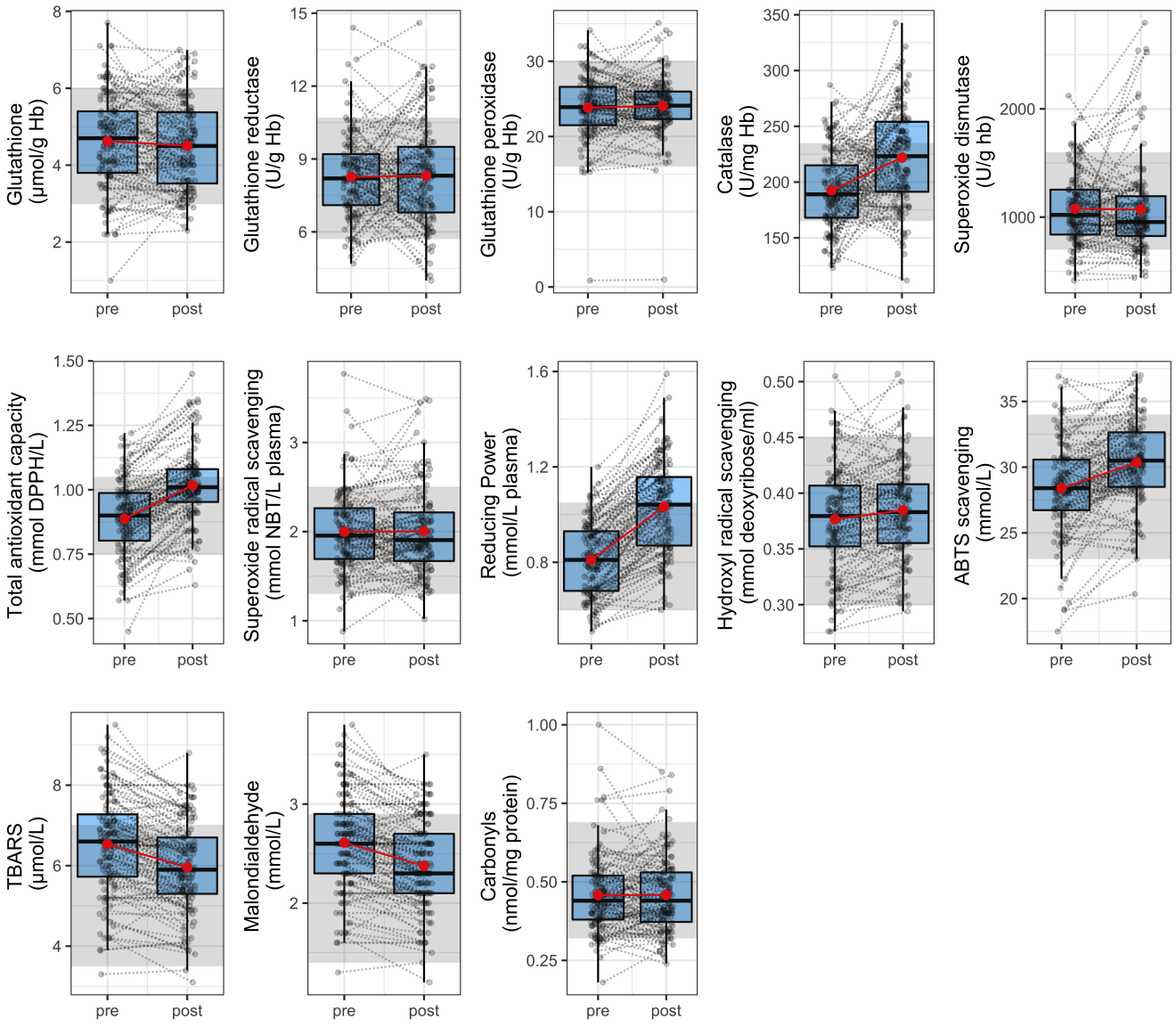

Figure 3: Changes in the measured parameters of oxidative stress and antioxidant mechanisms in blood before and after 10 ± 3 fasting days at Buchinger Wilhelmi. The mean value of all participants is indicated as black lines within the blue boxes symbolizing the global values of the whole group. Your individual values before and after fasting are highlighted in red. In general, the results show that 10 ± 3 days of the Buchinger Wilhelmi Fasting Program left some parameters statistically unchanged which means that your individual value cannot be interpreted (GSH, GPx, GR, Catalase, SOD). Some parameters definitively improved in the whole group of 109 participants like the TAC or the level of lipid peroxydation.

3/ Summary

Your antioxidative status at arrival was:
□ Low
☑ Intermediate
□ High

Comment on the evolution of your antioxidative status after 10±3 fasting days:
☑ Improved
□ Unchanged
□ Lower than at arrival

With the best compliments of Buchinger Wilhelmi

Dr Françoise Wilhelmi de Toledo and Franziska Grundler