H2, V-ATPase, pH, Deuterium

Ein 70 kg schwerer Mensch enthält 7 kg (= 10 Gew.-%) Wasserstoff, das sind $3{,}5 \cdot 10^3$ Mol Wasserstoff mit je $2 \cdot 6 \cdot 10^{23}$ Atomen, $4{,}2 \cdot 10^{27}$ Wasserstoffatome.

H2 = Protonen = pH, V-ATPase http://en.wikipedia.org/wiki/Vacuolar_H%2BATPase
https://en.wikipedia.org/wiki/Hydrogen_potassium_ATPase

„Der Stoffwechsel von V-ATPasen benötigt keine Proteinsynthese. Der Stoffwechsel benötigt ein intaktes Mikrotubuli-Netzwerk (Zytoskelett)

In der Atmungskette der Mitochondrien ist Nicotinamid-Adenin-Dinucleotid (NAD/NADH) der Wasserstoff (=Protonen) – Transporter zur Bereitstellung von Adenosintriphosphat (ATP).

A person weighing 70 kg contains 7 kg (= 10% by weight) of hydrogen, ie 3.5 × 10 3 mol of hydrogen with 2 × 6 × 10 23 atoms each, 4.2 × 10 27 hydrogen atoms.

Disassembly and reassembly of V-ATPases does not require new protein synthesis but does need an intact microtubular network" (Holliday LS et al., 2000).
http://www.xerlebnishaft.de/zytoskelett.pdf

In the mitochondrial respiratory chain, nicotinamide adenine dinucleotide (NAD / NADH) is the hydrogen (= proton) transporter for providing adenosine triphosphate (ATP).

PH http://de.wikipedia.org/wiki/PH-Wert
Säure-Base-Theorien http://www.gym1.at/chemie/pdf7kl/saer_bas.pdf

H2 = Protonen = PH Verhältnisse extrazellulär, an Zelloberflächen, sind zu unterscheiden gegenüber den intrazellulären PH-Verhältnissen.

Die intrazellulären PH-Verhältnisse folgen der Blutversorgung und dem intrazellulären Atmungszyklus. Sie entsprechen den intrazellulären ATP (Adenosintriphosphat) Verhältnissen. Optimal: Intrazellulär neutral (pH7), in den Lysosomen sauer.

Die extrazellulären PH-Verhältnisse folgen der Nahrungsaufnahme (Urin PH von 5 bis 9). Der PH-wert des Blutes wird bei Gesunden durch die Lungen und Nieren unabhängig von der Nahrungsaufnahme auf PH 7,37 bis 7,45 strikt einreguliert. Körperoberflächen sind optimal leicht sauer (PH 3 bis PH 5), Magen und Vagina haben optimal PH-Werte von 1 bis 3.

H2 = proton = PH ratios extracellular, on cell surfaces are to be distinguished from the intracellular pH conditions.

The intracellular pH of the blood supply and conditions follow the intracellular respiratory cycle. They correspond to the intracellular ATP (adenosine triphosphate) conditions. Optimal: Intracellular neutral (PH7) sour in the lysosomes.

The extracellular pH conditions follow food intake (urine pH of 5 to 9). PH value of blood in healthy people are strictly regulated through the lungs and kidneys between pH 7.37 and 7.45. Body surfaces are slightly acidic (pH 3 to pH 5), stomach and vagina pH values are optimal at pH 1 to pH 3.

„Säugetiere produzieren NO, CO2, H2S mit Hilfe von Enzymen, es fehlt ihnen aber

ein Enzym zur Produktion von H2.
Alle vier Gase modulierten bestimmte Signalwege. Sie sind therapeutisch aktiv.

Mammals produce NO, CO2, and H_2S by their native enzymes; however, mammals lack an enzyme to produce H_2.
All four gases modulate signaling pathways and have some therapeutic effects".

„**Kurkuma,** Topinambur, Hülsenfrüchte, Kohlarten und **Acarbose,** und evtl.auch **Metformin** vermehren die H2 Produktion durch Darmbakterien beim Menschen.
Turmeric, Topinambur, legumes, brassicas and **Acarbose** and possibly **Metformin** increase hydrogen production by intestinal bacteria in humans" (Ohta, 2011).

Acarbose / Glucobay®: „Zusatztherapie bei Diabetes mellitus in Verbindung mit Diät".

Probiotics, Lactulose, Vitamin C, **Pioglitazon (Actos®)**, pH 3-5 Hautpflegemittel

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[A Brønsted acid is a hydron donor and a Brønsted base is a hydron acceptor]

Wasserstoff - Isotope: Protium (stabil, 99,98% aller irdischen Wasserstoffatome) **– Deuterium** = „schwerer Wasserstoff" https://de.wikipedia.org/wiki/Deuterium https://en.wikipedia.org/wiki/Deuterium (stabil, 0,015% aller Wasserstoffatome) **– Tritium** (radioaktiv, sehr selten, Halbwertszeit 12,32 Jahre)
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Deuterium, deuterium

„Schweres Wasser verlangsamt oder unterbindet viele Stoffwechselvorgänge, weswegen die meisten Lebewesen bei sehr hohem Deuteriumgehalt nur noch eingeschränkt lebensfähig sind.

- **Schweres Wasser besitzt eine verminderte Lösefähigkeit im Vergleich zu normalem Wasser.**
- **Deuteronen haben ein geringeres Tunnelvermögen als Protonen und erschweren daher in biologischen Systemen die Aufrechterhaltung der elektrochemischen Gradienten an mitochondrialen Membranen. Diese sind aber ausschlaggebend für die Synthese von ATP.**
- **Die Funktionsfähigkeit der meisten Proteine hängt von der Beweglichkeit der umgebenden Wassermoleküle ab. Da Deuteronen wegen der größeren Masse träger sind, können die Proteine ihre Aufgaben nur schlechter oder überhaupt nicht mehr erfüllen.“**

Quelle: https://de.wikipedia.org/wiki/Deuterium#Anwendungen

„Deuterium can replace the normal hydrogen in water molecules to form heavy water (D_2O), which is about 10.6% denser than normal water (so that ice made from it sinks in ordinary water). Heavy water is slightly toxic in eukaryotic animals, with 25% substitution of the body water causing cell division problems and sterility, and 50% substitution causing death by cytotoxic syndrome (bone marrow failure and gastrointestinal lining failure).

Prokaryotic organisms, however, can survive and grow in pure heavy water, though they develop slowly.[16] Despite this toxicity, consumption of heavy water under normal circumstances does not pose a health threat to humans. It is estimated that a 70 kg (154 lb) person might drink 4.8 liters (1.2 gallons) of heavy water without serious consequences.[17] »
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