

Zusammenfassung

Testergebnisse des Clinical Nutrition ESPEN

Mehrere neuere Studien haben positive Auswirkungen von wasserstoffreichem Wasser (Evodrop-Wasser) auf die menschliche Leistungsfähigkeit gezeigt. Derzeit liegen jedoch nur begrenzte Informationen über die Wirksamkeit und Sicherheit von Evodrop-Wasser auf die neuropsychologische Leistung und die Sicherheitsergebnisse in der Allgemeinbevölkerung vor.

Methode

Sechzehn (n = 16) junge, normalgewichtige, gesunde Männer und nicht schwangere Frauen (Alter $20,9 \pm 1,5$ Jahre, Gewicht $70,2 \pm 11,5$ kg, Grösse $173,0 \pm 8,9$ cm; 6 Frauen) nahmen freiwillig an dieser offenen Interventionsstudie teil. Alle Patienten erhielten während eines 7-tägigen Interventionszeitraums 1,5 l Evodrop-Wasser pro Tag, welches mit einem Evobooster TM-Gerät (Evodrop AG, Zürich, Schweiz) hergestellt wurde. Die neuropsychologische Leistung wurde mit Hilfe von computergestützten Tests wie dem Seriellen Subtraktionstest (SST), dem Aufmerksamkeits-Netzwerktest (ANT) und dem Cognitive Drug Research Computerized Assessment System (COG-DRAS) zu Studienbeginn und nach 7 Tagen beurteilt. Die Teilnehmer wurden ausserdem angewiesen, während der gesamten Studie alle unerwünschten Wirkungen von Evodrop-Wasser (z. B. Darmstörungen, Durchfall) mit einem offenen Fragebogen zu melden.

Ergebnisse

Alle Freiwilligen schlossen die Studie ab, und kein Teilnehmer berichtete über Nebenwirkungen des Evodrop-Wassers. Die Compliance mit der Intervention betrug $96,0 \pm 7,4$ %. Es wurde ein signifikanter Unterschied bei den Veränderungen mehrerer neuropsychologischer Leistungsergebnisse zwischen dem Ausgangswert und 7 Tage nach der Verabreichung festgestellt ($P < 0,05$), wobei Evodrop-Wasser die exekutive Kontrolle, die Reaktionszeit und die Genauigkeit im ATN-Test sowie die einfache Reaktionszeit, die sofortige und verzögerte Worterkennung, die Bilderkennung und die Zahlenvigilanz im COG-DRAS-Test verbesserte.

Schlussfolgerung

Ein kurzfristiger Konsum von Evodrop-Wasser kann als gut verträgliches Getränk zur akuten Verbesserung der neuropsychologischen Leistung bei jungen Männern und Frauen führen. Weitere Studien sind erforderlich, um diese vorläufigen Ergebnisse durch eine langfristige, randomisierte, kontrollierte Studie zu festigen.

Frailty Criteria was reduced by 64%, which occurred in conjunction with significant improvements in physical function and strength.

Conclusion: RT with optimal protein intake significantly improved upon the Frailty Phenotype with associated improvements in physical function, strength, and increased basal MyoFSR along with type 1 and 2a myofiber CSA and whole lean body mass, with no added benefit of leucine supplementation.

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Disclosure of Interest: None declared

Vitamins, antioxidants and minerals
LB-51

PRE-PREGNANCY BMI AND VITAMIN D STATUS IN PREGNANT WOMEN IN LATVIA

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Rationale: Excess weight and vitamin D inadequacy play a significant role for both mother and foetus. We investigated dietary intake of vitamin D from foods and supplements and assessed serum 25(OH)D level and the association with the pre-pregnancy BMI categories in pregnant women.

Methods: A cross-sectional study implemented within the frame of the LZP project Nr. Izp-2019/1-0335 funded by the Latvian Council of Science included 290 women until the 7th day post-partum in the spring-autumn of 2020-21. Data was collected using medical documentation and food frequency questionnaire. Serum 25(OH)D was assessed using chemiluminescent immunoassay LIAISON®. The vitamin D cut-off value <30ng/mL used as reference values for insufficiency/deficiency.

Results: The mean age: 31.2 (SD: 5.3) years, normal BMI 62.0% (n=178), overweight 22.3% (n=67), obese 12.2% (n=35). Mdn serum 25(OH)D 30.0 (IQR: 21.7-39.3) ng/mL. The correlation between BMI and serum 25(OH)D (r=-0.18; p=0.03). Mdn dietary intake of vitamin D was 2.0 mcg/day (IQR: 1.2 - 3.2). 60.0% of pregnant women took vitamin D supplements (Mdn 20 mcg/day (IQR: 2.4 - 62.2)). The difference was found in serum 25(OH)D between respondents taking and not taking vitamin D supplements (p<0.001). 49.7% (n=144) had vitamin D insufficiency or deficiency.

Conclusion: Overweight and obesity as well as vitamin D deficiency and/or insufficiency are highly prevalent in Latvian pregnant women. Dietary intake of vitamin D is inadequate. Data indicate that obesity and overweight are associated with lower serum vitamin D concentration.

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LB-52

SHORT-TERM INTAKE OF HYDROGEN-RICH WATER POSITIVELY AFFECTS NEUROPSYCHOLOGICAL PERFORMANCE IN YOUNG ADULTS

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Rationale: Several recent trials demonstrated favorable effects of hydrogen-rich water (HRW) on human performance. However, limited information is currently available concerning the effectiveness and safety

of HRW on neuropsychological performance, and safety outcomes in the general population.

Methods: Sixteen (n = 16) young normal-weight healthy men and non-pregnant women (age 20.9 ± 1.5 years, weight 70.2 ± 11.5 kg, height 173.0 ± 8.9 cm; 6 women) volunteered to participate in this open-label interventional trial. All patients received the experimental intervention of 1.5 L per day of HRW produced by Evobooster™ machine (Evodrop AG, Zürich, Switzerland) during a 7-day intervention period. Neuropsychological performance was assessed by computerized assessment batteries, including Serial Subtraction Test (SST), Attention Network Test (ANT), and Cognitive Drug Research Computerized Assessment System (COG-DRAS) at baseline and 7-day follow-up. The participants were also instructed to report any adverse effects of HRW (e.g., gut disturbances, diarrhea) throughout the study with an open-ended questionnaire.

Results: All volunteers completed the trial, with no participants reported any side effects of HRW. The compliance with the intervention was 96.0 ± 7.4%. A significant difference was found for changes in several neuropsychological performance outcomes from baseline to 7-day post-administration (P < 0.05), with HRW improved executive control, reaction time and accuracy in ATN test, and simple reaction time, immediate and delayed word recognition, picture recognition and number vigilance in COG-DRAS test.

Conclusion: A short-term consumption of HRW can be recommended as a well tolerated drink to acutely improve neuropsychological performance in young men and women. Further trials are needed to corroborate these preliminary findings by employing long-term randomized controlled study design.

References:

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Critical care
LB-53

DETRIMENTAL EFFECT OF EARLY NUTRITION SUPPORT IN CRITICALLY ILL PATIENTS: RESULTS OF THE FRANS PROSPECTIVE INTERNATIONAL NUTRITIONAL COHORT STUDY

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Rationale: European guidelines suggest the introduction of early nutrition within the first 48 hours of admission in the ICU despite a level of evidence considered as “very low” in a recent meta-analysis. [1-2] The “French-speaking Icu Nutritional Survey” (FRANS) project is a multicenter prospective cohort. Our aim was to study the association between the introduction of early clinical nutrition in the ICU and patient outcome.

Methods: The FRANS study was conducted in 26 intensive care units in 2015. Adult patients with a predicted length of stay >3 days were included consecutively and monitored for 10 days. Data on patient outcome were also collected at D28. Using univariate and multivariate propensity score weighted logistic regression analysis, we investigated the association between early nutrition (<48 hours) and mortality at D28.

Results: In 3 months, 1206 patients were included. Early nutrition was administered in 718 patients (60%), enteral nutrition in 504 patients and parenteral nutrition in 214. In the univariate analysis, compared to patients without early nutrition, those fed early had a significant increase in mortality at D28 (14.6 vs. 21.7%, p = 0.002). In the weighted cohort, multivariate logistic regression analysis found a significant association between early nutrition and mortality at D28 (OR 1.05, 1-1.1). In a subgroup analysis, this association appeared to be significantly stronger in males patients, aged < 65 years, with a medical admission, a BMI between 18-25kg/m², a SOFA score on admission < 8 and an ICU length of stay < 10 days. Regarding the type of nutrition initiated, compared with no early nutrition, only early

CONGRESS PRESENTATION (<https://espencongress.com/>)

Short-Term Intake of Hydrogen-Rich Water Positively Affects Neuropsychological Performance in Young Adults

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Rationale: Several recent trials demonstrated favorable effects of hydrogen-rich water (HRW) on human performance. However, limited information is currently available concerning the effectiveness and safety of HRW on neuropsychological performance, and safety outcomes in the general population.

Methods: Sixteen ($n = 16$) young normal-weight healthy men and non-pregnant women (age 20.9 ± 1.5 years, weight 70.2 ± 11.5 kg, height 173.0 ± 8.9 cm; 6 women) volunteered to participate in this open-label interventional trial. All patients received the experimental intervention of 1.5 L per day of HRW produced by Evobooster™ machine (Evodrop AG, Zürich, Switzerland) during a 7-day intervention period. Neuropsychological performance was assessed by computerized assessment batteries, including Serial Subtraction Test (SST), Attention Network Test (ANT), and Cognitive Drug Research Computerized Assessment System (COG-DRAS) at baseline and 7-day follow-up. The participants were also instructed to report any adverse effects of HRW (e.g., gut disturbances, diarrhea) throughout the study with an open-ended questionnaire

Results: All volunteers completed the trial, with no participants reported any side effects of HRW. The compliance with the intervention was $96.0 \pm 7.4\%$. The changes in study outcomes during the trial are depicted in Table 1. A significant difference was found for changes in several neuropsychological performance outcomes from baseline to 7-day post-administration ($P < 0.05$), with HRW improved executive control, reaction time and accuracy in ATN test, and simple reaction time, immediate and delayed word recognition, picture recognition and number vigilance in COG-DRAS test.

Conclusions: A short-term consumption of HRW can be recommended as a well tolerated drink to acutely improve neuropsychological performance in young men and women. Further trials are needed to corroborate these preliminary findings by employing long-term randomized controlled study design.

Funding

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Conflict of interest

DZ, NT, VS and SMO declare no conflict of interest. FH is an employee of Evodrop AG producing HRW used in the study.

Table 1. Changes in study outcomes during the trial ($n = 16$). Values are mean \pm SD.

| | Baseline | Follow-up | <i>P</i> |
|---|-------------------|-------------------|----------|
| Attention Network Test | | | |
| Alertness (msec) | 40.8 \pm 21.8 | 38.4 \pm 18.4 | 0.346 |
| Orienting (msec) | 31.7 \pm 15.8 | 33.9 \pm 14.4 | 0.323 |
| Executive control (msec) | 115.6 \pm 26.8 | 102.6 \pm 17.8 | 0.009 |
| Reaction time (msec) | 552.8 \pm 41.4 | 531.8 \pm 46.1 | 0.001 |
| Accuracy (%) | 95.4 \pm 3.4 | 97.6 \pm 1.8 | 0.012 |
| Serial Subtraction Test | | | |
| Number of responses (score) | 15.4 \pm 7.8 | 18.1 \pm 8.6 | 0.107 |
| Number of errors (score) | 2.9 \pm 5.2 | 1.9 \pm 1.9 | 0.204 |
| Cognitive Drug Research Computerized Assessment Test | | | |
| Simple reaction time (msec) | 341.4 \pm 128.3 | 274.4 \pm 86.9 | 0.019 |
| Choice reaction time – accuracy (%) | 0.93 \pm 0.06 | 0.95 \pm 0.03 | 0.194 |
| Choice reaction time – reaction time (msec) | 432.9 \pm 29.1 | 446.2 \pm 39.4 | 0.158 |
| Immediate word recognition – accuracy (%) | 0.95 \pm 0.06 | 0.98 \pm 0.04 | 0.078 |
| Immediate word recognition – reaction time (msec) | 920.7 \pm 165.4 | 816.6 \pm 128.1 | 0.001 |
| Delayed word recognition – accuracy (%) | 0.93 \pm 0.06 | 0.96 \pm 0.05 | 0.013 |
| Delayed word recognition – reaction time (msec) | 835.1 \pm 121.7 | 729.4 \pm 78.4 | 0.001 |
| Delayed picture recognition – accuracy (%) | 0.93 \pm 0.06 | 0.92 \pm 0.08 | 0.385 |
| Delayed picture recognition – reaction time (msec) | 840.6 \pm 108.9 | 786.9 \pm 91.2 | 0.008 |
| Number vigilance – accuracy (%) | 0.83 \pm 0.15 | 0.94 \pm 0.10 | 0.003 |
| Number vigilance – reaction time (msec) | 446.8 \pm 31.8 | 430.2 \pm 19.6 | 0.047 |
| Memory scan – accuracy (%) | 0.97 \pm 0.08 | 0.98 \pm 0.06 | 0.379 |
| Memory scan – reaction time (msec) | 878.9 \pm 238.9 | 781.6 \pm 161.2 | 0.083 |