NOMOA
Medical and Pharmaceutical Clinical Trial Report

Japan System Planning Co., Ltd.

Japan Healthcare Co., Ltd.

Contents

1. Research Presentation at WorldPharma 2010

Copenhagen, Denmark—July 2010

Reduction Effect of Reactive Oxygen Species (Oxidative Stress) in Blood

Presenters: Naomasa Yamamoto[*1], Yuichi Koike[*2], Katsuyuki Kumano[*3], Norifumi Yonehara[*4]
[*1]Dept. of Biochemistry, [*2]Dept. of Drug Metabolism and Clinical Pharmacokinetics, [*4]Dept. of Pharmacology (all from School of Pharmaceutical Sciences, Ohu University), [*3]President, Japan System Planning Co., Ltd.

Introduction

Oxidative stress accumulation is associated with physiological conditions, such as aging, atherosclerosis, hypertension, obesity, myocardial infarction, fracture and stroke. Reducing oxidative stress in blood is therefore highly desirable. Japan System Planning Co., Ltd. developed a device, Yubi-MR (Pipetector), designed to mitigate oxidative stress by irradiating special electromagnetic waves to the yubi ("finger" in Japanese). In this study, Yubi-MR (Pipetector) demonstrated a significant reduction in d-ROM (derivatives-Reactive Oxygen Metabolites) levels after 10 minutes of the irradiation. Furthermore, clinical trials with mice showed suppressed activity following exposure to the electromagnetic radiation. These findings established Yubi-MR (Pipetector) as a promising oxidative stress reducer with potential applications for patients suffering from oxidative stress-related conditions.

Methods

Blood Donors: This study was approved by the ethics committee of Ohu University and conducted in compliance with the Declaration of Helsinki. Blood samples were obtained from nine healthy participants before and after exposure to Yubi-MR (Pipetector).
Measurement of d-ROM and BAP: Derivatives-reactive oxygen metabolites (d-ROM) and biological antioxidant potential (BAP) were measured using the FRAS4 system (Wismerll Co., Ltd.).

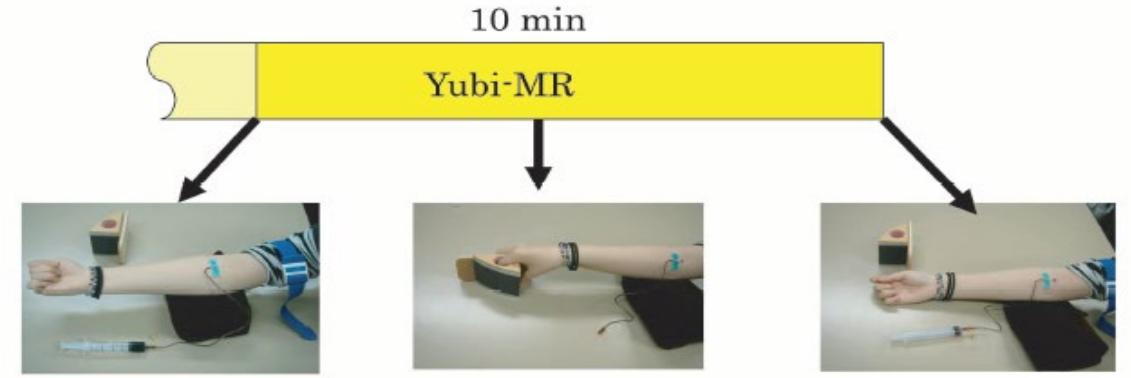
Results

Effect of Yubi-MR (Pipetector) on d-ROM and BAP:

- Average d-ROM levels:
  - Before irradiation: 249.6 ± 6.7 (mean ± SE)
  - After irradiation: 230.4 ± 14.8 (mean ± SE) ($p < 0.01$), indicating a significant reduction
- BAP levels:
  - No significant changes observed (2401.1 ± 37.5 before irradiation → 2401.2 ± 37.0 after irradiation, mean ± SE).

The results of the d-ROM test were consistent, with CARR U indicating the levels of hydroperoxides in blood, which are equivalent to reactive oxygen species. Healthy blood donors are estimated to have values of 250—300 CARR U (20.08—24.00 mg/dL of H_2O_2). One CARR U unit corresponds to 0.08 mg of H_2O_2. These values fall within the normal range, confirming that the blood donors were healthy. Even under normal conditions, 10 minutes of Yubi-MR (Pipetector) irradiation was able to suppress approximately 0.16 mg of H_2O_2 in the body.
* The 10-minute irradiation strength to the nine participants was 1.0×10^{-3} dB V/m x 3.
*See also Table 1 on the following page.

Blood Collection Before and After Finger Insertion into Yubi-MR (Pipetector)



Before collecting blood | Inserting a finger | After collecting blood

Table 1: Measurement Results of d-ROM and BAP for 9 Blood Donors

Human	BAP Before	d-ROM Before	BAP After	d-ROM After	BAP/d-ROM Before	BAP/d-ROM After
No.1	2223	364	2214	323	6.107	6.854
No.2	2224	237	2213	219	9.383	10.105
No.3	2486	222	2448	188	11.198	13.021
No.4	2491	241	2416	231	10.336	10.458
No.5	2537	266	2503	261	9.537	9.590
No.6	2381	201	2451	186	11.845	13.177
No.7	2444	267	2404	224	9.153	10.732
No.8	2377	193	2468	187	12.316	13.197
No.9	2447	256	2494	255	9.558	9.780
Average	2401.111	249.666	2401.222	230.44*	9.937	10.761

Discussion

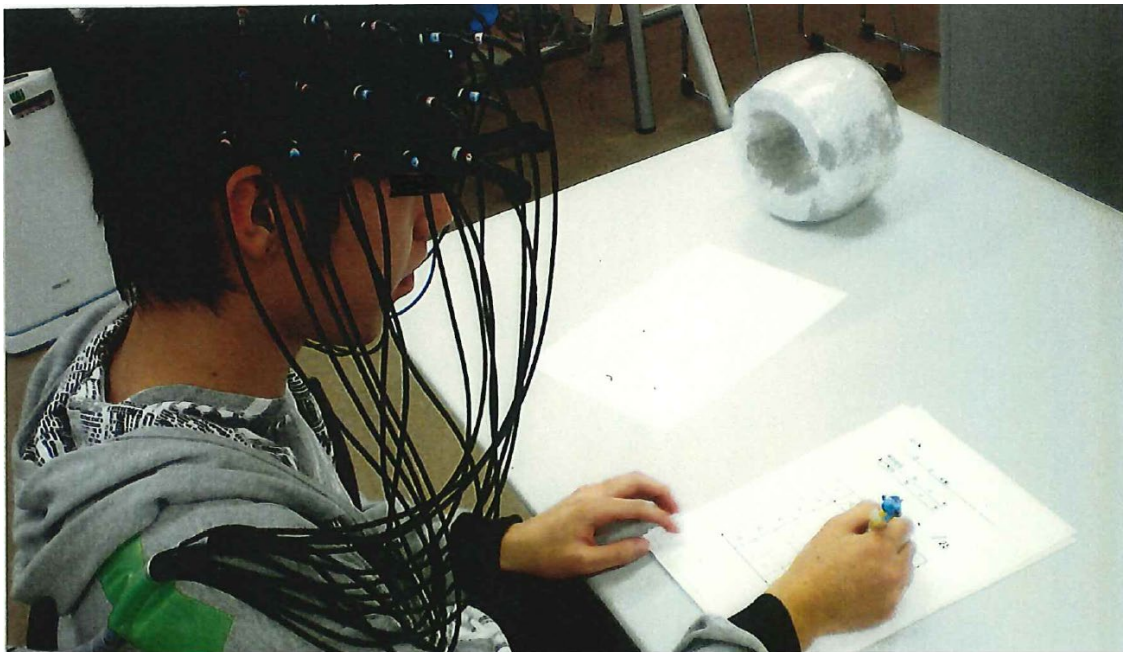
Yubi-MR (Pipetector) produces negatively charged water, which releases hydrated electrons that reduce Fe(III) ions into Fe(II) ions. Yubi-MR (Pipetector) exerts a similar effect on blood, reducing oxidative stress (d-ROM).

In a preliminary study examining the effects of Yubi-MR (Pipetector) on sleep, it was found that Yubi-MR enhances drowsiness and provides a calming effect on the blood. We hypothesized that Yubi-MR (Pipetector) influences the duration of behavioral inactivity in animals. This study demonstrated that Yubi-MR (Pipetector) increased the behavioral inactivity time in mice, although the exact duration of the increase remains unclear. Cited literature suggests that the accumulation of oxidative stress in the blood can induce drowsiness. However, by eliminating oxidative stress, it is believed that individuals may fall asleep more easily. These findings indicate a clear relationship between oxidative stresses and sleep quality.

2. Improvement in Calculation Ability and Attention Span in a Study on Enhancing Brain Functions

Suwa University of Science in 2010

Participant #1: Completed a calculation test 10 minutes before and after placing their arm into Pipetector.



After using Pipetector (NOMOA):
Computation capability increased, adrenaline rush calmed down, and concentration increased.

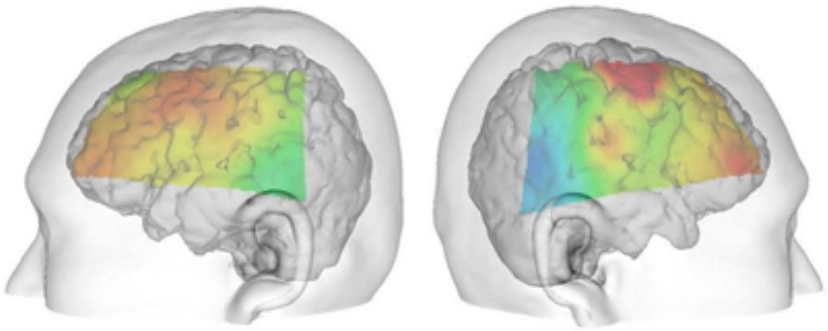
資料 1

Data 1

パイプテクター(NOMOA)を使用後に計算能力が向上
同時に、興奮状態が沈静化し、集中力が向上

パイプテクター(NOMOA) 使用前 (被験者1)

Before using Pipetector (NOMOA): 21 years old, male

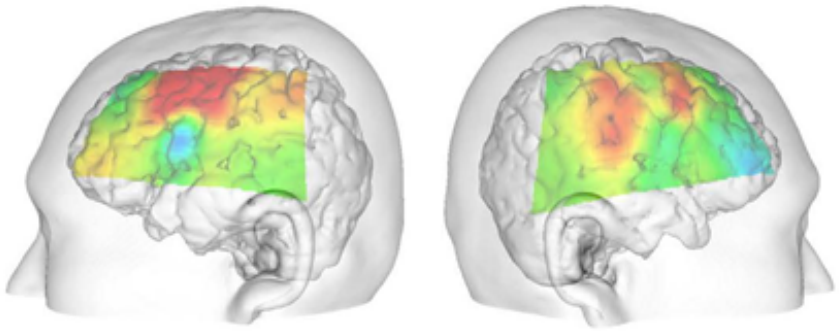


計算テスト結果　104 点

Calculation Test Score: 104

パイプテクター(NOMOA) 使用後 (被験者1)

After 10-minute use of Pipetector (NOMOA)　※10分間使用後



計算テスト結果　125 点

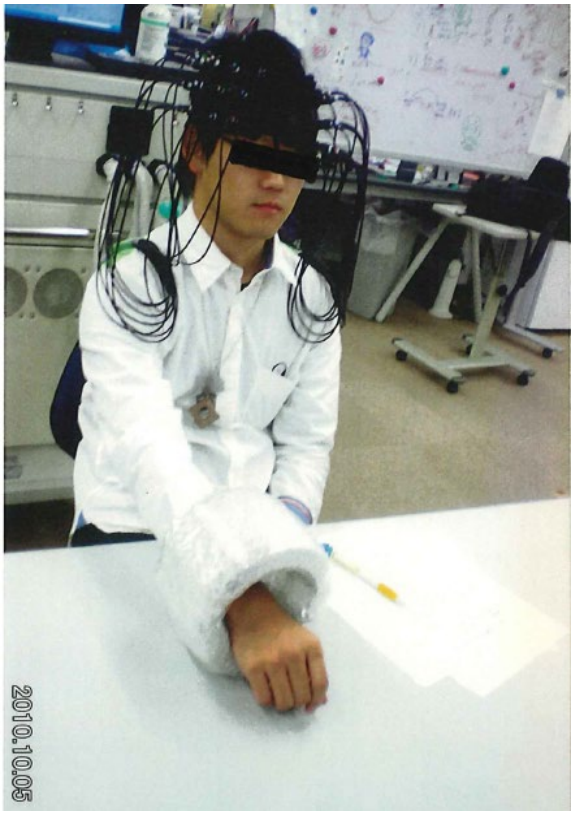
(使用前に対し、使用後は計算能力が約20%向上)

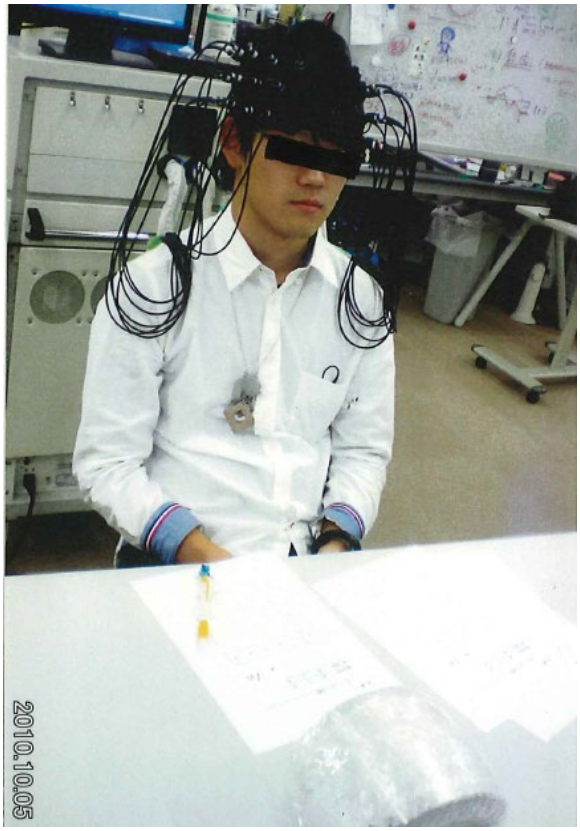
Calculation Test Score: 125

*NOMOA is a finger-type Pipetector

*Compared with before using Pipetector (NOMOA), computation capability increased by 20%.

Participant #2: Completed a calculation test 10 minutes before and after placing their arm into Pipetector.





After using Pipetector (NOMOA):
Computation capability increased, and the view point once spread calmed down and stayed focus on single point.

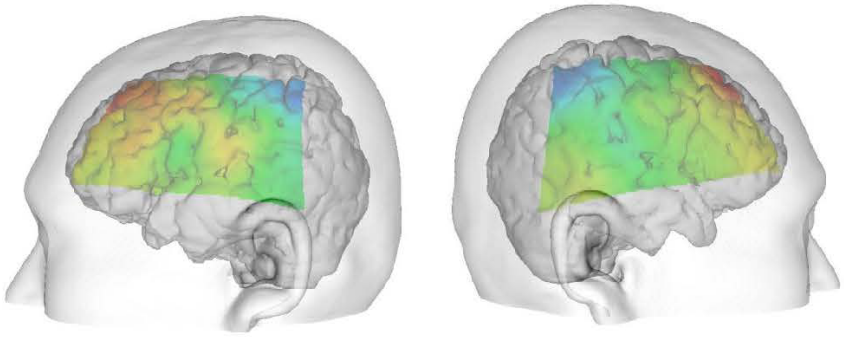
資料 2

Data 2

パイプテクター(NOMOA)を使用後に計算能力が向上 同時に視点がバラついていたのが一点に集中するようになった

パイプテクター (NOMOA)使用前 (被験者2)

Before using Pipetector (NOMOA): 22 years old, male

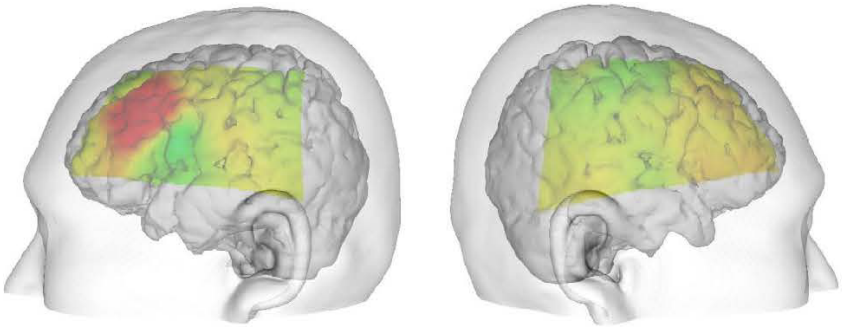


計算テスト結果　94 点

Calculation Test Score: 94

パイプテクター (NOMOA)使用後 (被験者2)

After 10-minute use of Pipetector (NOMOA)　※10分間使用後



計算テスト結果　107 点

(使用前に対し、使用後は計算能力が約14%向上)

Calculation Test Score: 107

*NOMOA is a finger-type Pipetector

*Compared with before using Pipetector (NOMOA), computation capability increased by 14%.

3. Research Presentation at the Microdialysis Seminar

On December 14, 2013, at the microdialysis seminar held at Ochanomizu University, Pipetector's anti-oxidative properties were shown to inhibit the reduction of platelet aggregation ability. This research was mainly presented by Prof. Yuichi Koike from the Pharmaceutical Department of Ohu University.

[一般講演　ッション３]

座長：斎藤　顕宜　（国立精神・神　医療研究センター 精神保健研究所）

16：15　注意欠陥/多動性障害様行動ラ　トに対する低用量メチルフェニデートの効果
◯Yuki Kishikawa[1,3], Yukie Kawahara[1], M　to Yamada[1], Hiroshi Kawahara[2], Akinori Nishi[1]
([1]Department of Pharmacology Kurume U　rsity School of Medicine, [2]Department of Dental Anesthesiology, School of Dentistry, Tsu　University, [3]YIC Rehabilitation College)

16：30　柑橘系果皮由来ノビレチンの認　機能改善作用とドパミン遊離作用
◯矢吹悌[1]、大泉康[2,3]、福永浩　[1]
([1]東北大学大学院薬学研究科薬　分野、[2]静岡県立大学薬学部、
[3]東北大学大学院 超臨界溶媒工　研究センター)

16：45　OA-1 受容体拮抗薬 DOPA cyc　exyl ester の methamphetamine 誘発 dopamine 遊離に及ぼす影響
◯岩瀬祥之[1]、森友久[1]、中村　[1]、肥田野翔[1]、
芝崎真裕[1]、東山公男[2]、五　良郎[3]、鈴木勉[1]
([1]星薬科大学・薬・薬品毒性　[2]星薬科大学・薬・有機合成、
[3]横浜市立大学・医・薬理)

17：00　NMRパイプテクターの抗酸化作用がもたらす生体への影響
◯小池勇一[1]、山本正雅[2]、中楯奨[3]、上女鹿昇[4]、熊野活行[4]、寺澤理恵[5]、米原典史[5]
([1]奥羽大学薬学部薬物代謝学、[2]奥羽大学薬学部生化学、[3]奥羽大学薬学部薬化学、
[4]日本システム企画株式会社、[5]奥羽大学歯学部歯科薬理学)

17：15　[閉会の辞]

会長　廣中　直行　（三菱化学メディエンス株式会社、科学技術振興機構 CREST）

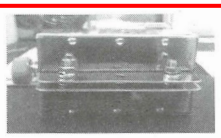
18：00 ～20：00　懇親会　茗渓会館

Pipetector is a device designed to reduce iron rust (corrosion) in plumbing systems by converting it into magnetite, an insoluble and stable substance, thereby improving water quality.
When installed on water supply pipes, Pipetector radiates electromagnetic waves into the water. Remarkably, Pipetector operates without requiring a power source—it functions solely through its installation on the pipes.
We undertook this research with the belief that the reduction effect of Pipetector could extend beyond plumbing systems to biological applications. Specifically, we explored its potential to mitigate or eliminate oxidative stress in living organisms, which often results from oxidative reactions inherent to biological processes.

NMR パイプテクターの抗酸化作用がもたらす生体への影響

小池勇一[1)]、山本正雅[2)]、中楯　奨[3)]、上女鹿　昇[4)]、熊野活行[4)]、寺澤理恵[5)]、米原典史[5)]
奥羽大学薬学部薬物代謝学[1)]、同大薬学部生化学[2)]、同大薬学部薬化学[3)]、日本システム企画株式会社[4)]、同大歯学部歯科薬理学[5)]

【目的】NMR パイプテクターは水道の赤水の原因である鉄錆（酸化鉄）を還元し、水に不溶性の還元鉄として浄化する装置である。上水配管に装着し、水に電磁波が当たる仕組みになっているが、電気などのエネルギーを一切使用せず、配管に装着するだけで効果を発揮する。この NMR パイプテクターの還元作用を生物に応用すると、生体の酸化反応により惹起される諸々の酸化ストレスを除去あるいは、軽減することができる可能性があると考え、本研究を行った。



【方法】NMR パイプテクター：ヒトへ応用するため、指に電磁波をあてる装置（NOMOA：日本システム企画）を開発した。
*In vivo*実験：①dROM と BAP（酸化ストレスマーカー）の測定：ヒトの人先指を 10 分間NOMOAに挿入後、採血し、血漿の dROM と BAP を FRAS4（ウイスマー社）を用いて測定した。②マウスの行動量の測定：NMR パイプテクター（PT-50DS：日本システム企画）に雄性マウス（30g）を自由に動ける状態で放置し 10 分後、NMR パイプテクターから取り出し、行動量測定装置（スーパーメックス：室町機械）に移し、行動量を 24 時間測定した。③ラット脳内灌流実験：SDラットを用い、扁桃体に直管型マイクロダイアリシスチューブを挿入固定し、ストレス負荷前後の脳内 NO の変化を観察した。

The platelet aggregation induced by in vitro collagen remained stable at 60% on the day of blood sampling. However, after 14 hours, the aggregation ability decreased to 45.5%.
In contrast, platelet-rich plasma treated with Pipetector maintained a significantly higher aggregation ability of 51.4% (P < 0.4%).

In vitro 実験：①血小板への影響：ヒトから採血により多血小板血漿（PRP）を作製し、写真のようにNMRパイプテクター（PT-20DSとPT-30DS：日本システム企画）内にPRPを入れ、血小板が沈殿し凝集しない程度に 14 時間、室温で震盪させた。その後コラーゲンによる血小板凝集の最大値、lagtime、NOの放出量を測定した。②NO の測定：ENO-200(エイコム社)を用い血漿中の濃度を測定した。倫理規定：本研究は倫理委員会の承諾を得ている。
【結果】ヒトの指に 10 分間、NOMOA を装着すると dROM 値が有意に低下した。しかし BAP 値には変化がなかった。*In vitro* コラーゲンによる血小板凝集は、採血当日の凝集能は 60%と差を認めなかったが、14 時間放置すると、凝集能が 45.5.%と低下した。これに対し NMR パイプテクターを装着した PRP は 51.4%と有意（P<0.4%）に凝集能を保持した。また Lagtime も有意に短縮することが明らかになった。このとき NO の合成能を調べると、NMR パイプテクターを処理した血小板からの NO の放出量は対照に比べ多く、血小板のバイアビリティーの保持が示唆された。
【考察】NMR パイプテクターの電磁波の照射により、水を還元状態にすると考えられるが、*In vivo* 実験で、ヒト血液に作用させると酸化ストレス値が低下することがわかった。*In vitro* 実験では、血液の血小板に及ぼす影響を検討したが、血小板のコラーゲンによる凝集能の保持と NO の合成能の保持を有意に延長することが明らかになった。
【結論】NMR パイプテクターは酸化ストレス・リムーバーとして利用できると考えられる。

4. Research Presentation at WCP 2018

Kyoto, Japan—July 2018

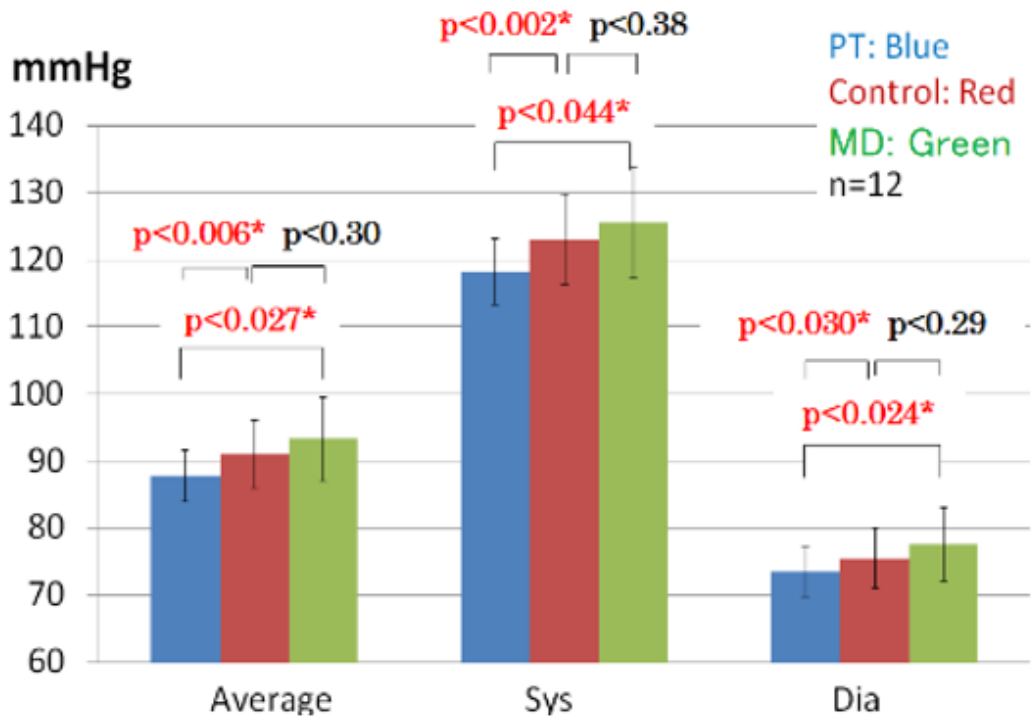
Presenters: Naomasa Yamamoto[*1*2], Noboru Kamimeka[*2], Kuramitsu Kyogo[*1], Haruo Nogami[*3], Fumio Fukai[*4], Yuichi Koike[*1], Katsuyuki Kumano[*2]

[*1]School of Pharmaceutical Science, Ohu University, [*2]JSP Life Science Laboratory, [*3]Department of Physical Therapy, Japan University of Health Sciences, *[4]Department of Medical Life Sciences, School of Pharmaceutical Sciences, Tokyo University of Science

1. Verification of Blood Pressure Reduction

Effects of Pipetector (PT) on Blood Pressure (BP)

In all 19 participants, PT reduced BP during both systolic and diastolic phases compared to the control. In contrast, the magnetic device (MD) increased BP in both phases compared to the control.



2. Verification of Heart Rate Reduction

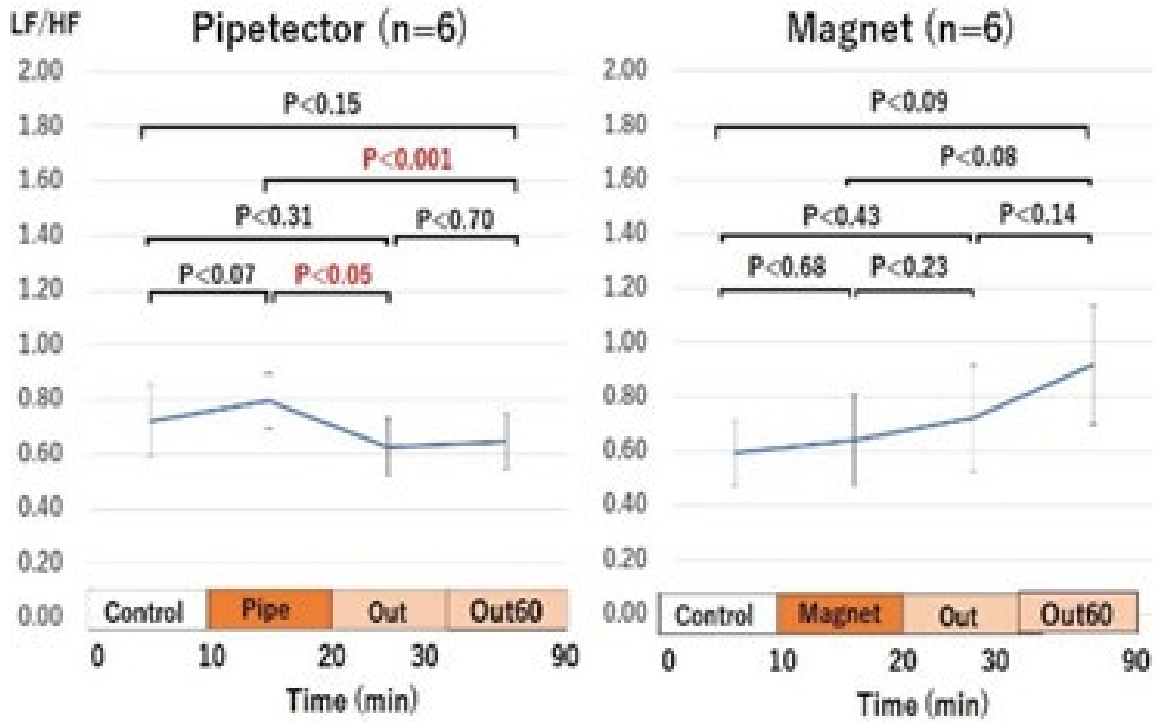
Reduction in Sympathetic Nervous Activity (LF) / Parasympathetic Nervous Activity (HF) Ratio through PT

Heart rate variability was calculated using the RRI power spectrum. The LF/HF ratio significantly decreased after the PT experiment but showed no notable reduction in the MD experiment. These results suggest that PT enhances parasympathetic dominance, inducing a relaxation effect in participants.

Test Results

The LF/HF ratio and the alpha wave / beta wave ratio indicate that PT induced relaxation. The average BPs during experiments using PT, MD, and the control were 87.8 ± 3.9 mmHg, 93.3 ± 6.3 mmHg, and 91.1 ± 5.1 mmHg, respectively. PT significantly reduced BP by 3.3 mmHg, while MD showed no significant change.

PT decreased systolic BP by 4.9 mmHg and diastolic BP by 2 mmHg. The most significant BP reduction occurred between 10:00 AM and 5:00 PM (average BP reduction of 4.7 mmHg; systolic BP reduction of 5.7 mmHg; diastolic BP reduction of 4.2 mmHg). Additionally, PT lowered the heart rate by 5 bpm during the daytime and significantly prolonged the RRI. PT also reduced oxygen consumption from 8.9 ± 0.6 mmHg to 8.3 ± 0.6 mmHg.



3. Increase in Relaxation-Associated Alpha Waves through Pipetector

4. Reduction in Stress-Associated Beta Waves through Pipetector
(Beta waves increased when using MD)

Increase in alpha/beta ratio through Pipetector

BW measurements taken 10 minutes after removing PT showed a significant increase in the alpha/beta ratio. Conversely, no effect was observed under the same conditions for MD (see below Table 1). The increase in the alpha/beta ratio with PT was due to an increase in alpha waves and a decrease in beta waves (below Table 2). These results demonstrate that PT induces a relaxation effect on the brain.

図 1

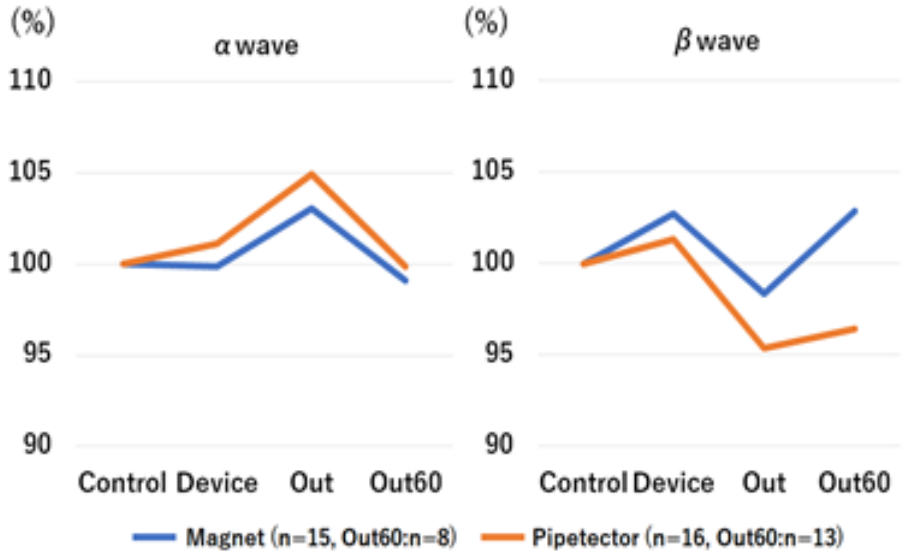


図 2