



INTERNATIONAL EXHIBITION & SYMPOSIUM ON PRODUCTIVITY, INNOVATION, KNOWLEDGE & EDUCATION

“Optimizing Innovation in Knowledge, Education and Design”

EXTENDED ABSTRACT



e ISBN 978-967-2948-56-8



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© iSpike 2023 Extended Abstract is jointly published by the Universiti Teknologi MARA (UiTM) Cawangan Kedah and Penerbit UiTM (UiTM Press), Universiti Teknologi MARA (UiTM), Shah Alam, Selangor.

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Azni Syafena Andin Salamet
Nurfaznim Shuib

Cover design : Syahrini Shawalludin
Layout : Syahrini Shawalludin

eISBN 978-967-2948-56-8

Published by:
Universiti Teknologi MARA (UiTM) Cawangan Kedah,
Sungai Petani Campus,
08400 Merbok,
Kedah,
Malaysia.

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Assalamualaikum warahmatullahi wabarakatuh,



First and foremost, I would like to express my gratitude to the organizing committee of i-Spike 2023 for their tremendous efforts in bringing this online competition a reality. I must extend my congratulations to the committee for successfully delivering on their promise to make i-Spike 2023 a meaningful event for academics worldwide.

The theme for this event, 'Optimizing Innovation in Knowledge, Education, and Design,' is both timely and highly relevant in today's world, especially at the tertiary level. Innovation plays a central role in our daily lives, offering new solutions for products, processes, and services. By adopting a strategic approach to 'Optimizing Innovation in Knowledge, Education, and Design,' we have the potential to enhance support for learners and educators, while also expanding opportunities for learner engagement, interactivity, and access to education.

I am awed by the magnitude and multitude of participants in this competition. I am also confident that all the innovations presented have provided valuable insights into the significance of innovative and advanced teaching materials in promoting sustainable development for the betterment of teaching and learning. Hopefully, this will mark the beginning of a long series of i-Spike events in the future.

It is also my hope that you find i-Spike 2023 to be an excellent platform for learning, sharing, and collaboration. Once again, I want to thank all the committee members of i-Spike 2023 for their hard work in making this event a reality. I would also like to extend my congratulations to all the winners, and I hope that each of you will successfully achieve your intended goals through your participation in this competition.

Professor Dr. Roshima Haji Said
RECTOR
UiTM KEDAH BRANCH



WELCOME MESSAGE (i-SPIKE 2023 CHAIR)



We are looking forward to welcoming you to the 3rd International Exhibition & Symposium on Productivity, Innovation, Knowledge, and Education 2023 (i-SPIKE 2023). Your presence here is a clear, crystal-clear testimony to the importance you place on the research and innovation arena. The theme of this year's Innovation is "*Optimizing Innovation in Knowledge, Education, & Design*". We believe that the presentations by the distinguished innovators will contribute immensely to a deeper understanding of the current issues in relation to the theme.

i-SPIKE 2023 offers a platform for nurturing the next generation of innovators and fostering cutting-edge innovations at the crossroads of collaboration, creativity, and enthusiasm. We enthusiastically welcome junior and young inventors from schools and universities, as well as local and foreign academicians and industry professionals, to showcase their innovative products and engage in knowledge sharing. All submissions have been rigorously evaluated by expert juries comprising professionals from both industry and academia.

On behalf of the conference organisers, I would like to extend our sincere thanks for your participation, and we hope you enjoy the event. A special note of appreciation goes out to all the committee members of i-SPIKE 2023; your dedication and hard work are greatly appreciated.

Dr. Junaida Ismail

Chair

3rd International Exhibition & Symposium Productivity, Innovation, Knowledge, and Education 2023 (i-SPIKE 2023)

BRAIN BOOSTER

Mohana Murugayan
SJKT Selama, Perak
m-11778046@moe-dl.edu.my

Loghen Rajakumar
SJKT Selama, Perak
m-11778045@moe-dl.edu.my

Udayaraj Gobinath
SJKT Selama, Perak
m-11778052@moe-dl.edu.my

ABSTRACT

Mental fatigue is a state of tiredness that sets in when your brain's energy levels are depleted. Mental fatigue is usually the result of prolonged stress. Long-term stress can be brought on by a variety of factors, including a challenging life event, a demanding job, or procrastination. When your brain feels exhausted and unable to function properly, it leaves you mentally and emotionally drained. This is commonly known as brain fog or mental fatigue. Mental fatigue is insidious. Its symptoms develop gradually and are not always noticed. Most commonly, these manifests themselves as various issues like anxiety, depression, physical fatigue, sleep issues, poor eating habits, accidents and more. To solve the mental fatigue problem, we created a compound called brain booster. To create an eco-friendly, economical, and hazardless compound that could decrease mental fatigue and boost brain alertness and freshness for an effective day works. The brain booster compound was tested with randomly selected 50 different civilians, and the outcome of the quantitative test shows that the compound helps most of the people to be more alert and refreshed than usual during daily chores. The novelties and specialty are the compounds were made of 100% natural material, no artificial preservatives added, no side effects, hazardless, safe for children, last longer because contains a natural antibacterial compound(Caryophyllene), pure and natural can be used by all regardless of religion and race, natural antibacterial, natural insect repellent for vehicles, cheap and affordable, prepared in 3 different mediums inhaler, spray and car refresher, reusable and environmentally friendly. The compound can lessen the mental fatigue or stress of the user by boosting the brain function, which leads to an increase of alertness and freshness. When the users are more alert and less tired, it will directly have a significant impact, which leads to a decrease in accidents caused by stressed and tired people.

Keywords: Brain Booster, Fatigue, Drowsy, stress

PROBLEM STATEMENT

Mental fatigue is insidious — its symptoms develop gradually and are not always noticed. Most commonly, this manifest themselves as various issues like anxiety, depression, physical fatigue, sleep issues, poor eating habits, accidents and more. To solve the mental fatigue problem, we created a compound CALLED BRAIN BOOSTER

OBJECTIVE

To create an eco-friendly, economical, and hazardless compound that could decrease mental fatigue and boost brain alertness and freshness for an effective day works.

METHODOLOGY

1. The materials used to create the compound are Peppermint leaves, Ginseng, Rosemary, Cloves, Cinnamon, and Olive oil.
2. To prepare the compound that can reduce the metal fatigue, the natural chemical compounds of the herbs need to be extracted to be mixed later.
3. 50g of Peppermint leaves, ginseng root, rosemary leaves, clove and cinnamon were prepared in 5 different 100ml glass containers.
4. The containers which contain 5 different herbs were filled with 60ml of olive oil until the oil fully covered the herbs and shaken few times before sealed. This will ensure the herbs and the oil are well combined.
5. The containers with peppermint, ginseng root and rosemary leaves were stored in cold dark place for two days, while the containers with cloves and cinnamon were stored for 12 days. The herbs and the olive oil need time to interact so that the olive oil can extract the chemical properties of the herbs.
6. After the designated time, the herbs strained out from the oil.
7. The oils which contain the natural chemical compounds of the herbs were mixed in the required quantity to create the mental booster compound to fight the mental fatigue. The amount of the mixture of the natural chemical compounds of the herbs are as follows:

COMPOUNDS	AMOUNT(ml)
Olive oil	10 ml
Peppermint oil	5 ml
Ginseng oil	5 ml
Rosemary oil	5 ml
Clove oil	3ml
Cinnamon oil	3ml

8. Later the compounds were transferred to the 3 mediums, which is Inhaler, Spray and Car refresher.

RESULT & DISCUSSION

The Brain Booster compound was tested with randomly selected 50 different vehicle drivers, adult students, and other civilians. Their outcome and testimony were recorded in google form. All tests were conducted under the same circumstances. The outcome of the quantitative test shows that the compound helps most of the users to be more alert and refreshed than usual during daily chores. This shows that the compound works as expected and is capable of reducing the mental fatigue caused by stressful day.

Sl. No.	Name	Email	Phone	Occupation	How long do you use the Brain Boost?	How much percentage used?	Comment on the pros and cons of Brain Boost
12/01/2021	15.17 Anwar Johan	anwar171@gmail.com		Factory worker	2 weeks	Yes	80% Very good product
12/01/2021	15.18 Personal Secretary	personal_s@outlook.com		Sprayer	1 week	Yes	80% Very good product
12/01/2021	15.19 Dr. Nur Hafizah	h_fahizah@outlook.com		Inhaler	8 days	Yes	80% Very good product
12/01/2021	15.20 Gan Ah Meng	gan_ahmeng@gmail.com		Air refresher	1 week	Yes	80% Very good product
12/01/2021	15.21 18 Mathewson	mathewson18@gmail.com		Student	2 weeks	Yes	80% Very good product
12/01/2021	15.22 AMR BIRI BRIDARA	amr_biribridara@gmail.com		Vehicle Driver	4 days	Yes	20% Not very active
12/01/2021	15.23 ANWAR YONG JENNY	anwar.yong.jenny@gmail.com		Factory worker	2 weeks	Yes	80% Very good product
12/01/2021	15.24 SHARILUDIN BIRI AG	shariludinbiriag@gmail.com		Teacher	3 weeks	Yes	80% Very good product
12/01/2021	15.25 SHARILUDIN BIRI AG	shariludinbiriag@gmail.com		Teacher	11 days	Yes	80% Very good product
12/01/2021	15.26 HASWANI S. SARIKIN	haswani.s.sarikin@gmail.com		Air refresher	2 weeks	Yes	80% Very good product
12/01/2021	15.27 MEYI SUCIYUS	meiyisuci@gmail.com		Inhaler	1 week	Yes	80% Very good product
12/01/2021	15.28 HISHAMUDIN BIRI AG	hishamudinbiriag@gmail.com		Air refresher	8 days	Yes	80% Very good product
12/01/2021	15.29 JANEY AIP HASLI	janeayaiphasli@gmail.com		Inhaler	1 week	Yes	80% Very good product
12/01/2021	15.30 JESSICA CHAN LIA	jessicachanlia@gmail.com		Sprayer	2 weeks	Yes	80% Very good product
12/01/2021	15.31 KAMARUDIN BIRI AG	kamarudinbiriag@gmail.com		Inhaler	4 days	Yes	80% Very good product
12/01/2021	15.32 ALAMUDIN A. ALI	alamudinali@gmail.com		Inhaler	8 days	Yes	80% Very good product
12/01/2021	15.33 LEE SENG LEE	leesenglee@gmail.com		Inhaler	3 weeks	Yes	80% Very good product
12/01/2021	15.34 LINA BINTI SAGALA	linasagala@gmail.com		Air refresher	1 week	Yes	80% Very good product
12/01/2021	15.35 MOHAT DIN ADULLA	mohatdinadulla@gmail.com		Inhaler	2 weeks	Yes	80% Very good product
12/01/2021	15.36 MOHD KHALIL	mohdkhalil@gmail.com		Sprayer	1 week	Yes	80% Very good product
12/01/2021	15.37 MOHD KHALIL	mohdkhalil@gmail.com		Air refresher	8 days	Yes	80% Very good product
12/01/2021	15.38 MOHD KHALIL	mohdkhalil@gmail.com		Inhaler	1 week	Yes	80% Very good product
12/01/2021	15.39 MOHD KHALIL	mohdkhalil@gmail.com		Air refresher	2 weeks	Yes	80% Very good product
12/01/2021	15.40 MOHD KHALIL	mohdkhalil@gmail.com		Inhaler	4 days	Yes	80% Very good product
12/01/2021	15.41 MOHD KHALIL	mohdkhalil@gmail.com		Air refresher	2 weeks	Yes	80% Very good product
12/01/2021	15.42 MOHD KHALIL	mohdkhalil@gmail.com		Inhaler	11 days	Yes	80% Very good product
12/01/2021	15.43 MOHD KHALIL	mohdkhalil@gmail.com		Air refresher	2 weeks	Yes	80% Very good product
12/01/2021	15.44 MOHD KHALIL	mohdkhalil@gmail.com		Inhaler	2 weeks	Yes	80% Very good product
12/01/2021	15.45 MOHD KHALIL	mohdkhalil@gmail.com		Air refresher	1 week	Yes	80% Very good product
12/01/2021	15.46 MOHD KHALIL	mohdkhalil@gmail.com		Inhaler	8 days	Yes	80% Very good product
12/01/2021	15.47 MOHD KHALIL	mohdkhalil@gmail.com		Air refresher	2 weeks	Yes	80% Very good product
12/01/2021	15.48 MOHD KHALIL	mohdkhalil@gmail.com		Inhaler	1 week	Yes	80% Very good product
12/01/2021	15.49 MOHD KHALIL	mohdkhalil@gmail.com		Air refresher	2 weeks	Yes	80% Very good product
12/01/2021	15.50 MOHD KHALIL	mohdkhalil@gmail.com		Inhaler	4 days	Yes	80% Very good product
12/01/2021	15.51 MOHD KHALIL	mohdkhalil@gmail.com		Air refresher	2 weeks	Yes	80% Very good product
12/01/2021	15.52 MOHD KHALIL	mohdkhalil@gmail.com		Inhaler	4 days	Yes	80% Very good product
12/01/2021	15.53 MOHD KHALIL	mohdkhalil@gmail.com		Air refresher	2 weeks	Yes	80% Very good product

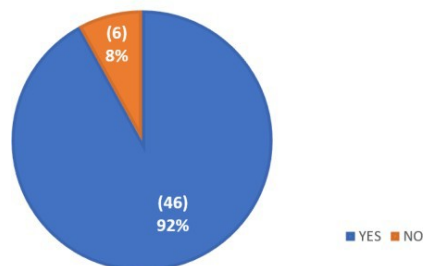
Google form response

Link :

<https://docs.google.com/spreadsheets/d/1J81knCQ7nU6YFdf4yWFEUEMz4bLNlxxQZcnPUOujtc/edit?usp=sharing>

'BRAIN BOOSTER' reduces 'Mental Fatigue'		Percentage given for the functionality of 'BRAIN BOOSTER'					Face medical issues during the usage of the 'BRAIN BOOSTER'	
YES	NO	20%	40%	60%	80%	100%	YES	NO
46	4	4	0	18	28	0	8	42
92%	8%						16%	84%

THE COMPOUND REDUCES MENTAL FATIGUE



IMPACTS

The brain booster compound is capable to lessen the mental fatigue of vehicle drivers, students, and teachers by boosting the brain function which leads to the increase of alertness and freshness. When the user is more alert and less fatigued it will directly lead to decrease of accidents and other unwanted events caused by tired users. Other than that, the compounds also function as natural antibacterial, respiratory system regulator and natural insect repellent.

COMMERCIALIZATION PLAN

TARGET: Vehicle Drivers, teachers, students, and other civilians with mental fatigue

UNIT TO PRODUCE: 100 Pieces of Each Medium

COST PER-100ml: RM 11.00 / 2.47 USD

PRICE PER-UNIT TO SELL:

- Inhaler : RM 5.00 / 1.12 USD
- Spray : RM 8.00 / 1.80 USD
- Air Refresher : RM 9.00 / 2.02 USD

INVESTMENT	TOTAL	SELLING PRICE	TOTAL
100 UNIT X RM 11.00	RM 1100	100 INHALER X RM 5.00	RM 500.00
		100 SPRAY X RM 8.00	RM 800.00
		100 Air Refresher X RM9.00	RM 900.00
ADVERTISEMENT + PACKAGING	RM 500		
TOTAL INVESTMENT	RM 1600/359 USD	TOTAL	RM 2200/494USD
PROFIT = RM 2200 – RM 1500 =			RM 700 / 157 USD

We spend around 11.00 ringgit to prepare 100ml of the brain booster compound for three mediums. We target to sell it to Vehicle Drivers, teachers, students, and other civilians with mental fatigue. We plan to produce 100 units of each medium for now. In the end, when we calculate our profit, we will earn around 700 ringgits.

NOVELTY

The specialties of our compound are: -

- Made of 100% Natural Materials
- No Preservatives

- No side effects, Hazardless and safe for Children
- Last long because contains natural antibacterial compound. (Carvacrol).
- Cheap and affordable
- Reusable
- Environmentally friendly

FUTURE PLAN

Further research needs to be carried out to find out whether this remedy can be used as an Antibacterial liquid. Few past research reports show that the herbs used to create the Anti-Drowsy Herbal Remedy also contain natural chemicals which could eliminate bacteria and germs.

PREVIOUS RESEARCH

BIL	RESEARCH TITLE	YEAR	UNIVERSITY	FINDINGS
1.	The effectiveness of in-vehicle peppermint fragrance to maintain car driver's alertness	2015	Institut Teknologi Bandung (ITB), West Java, Indonesia	shows that peppermint is promising to be applied as in-vehicle fragrance in order to maintain drivers' alertness.
2.	Effects of Peppermint and Cinnamon Odor Administration on Simulated Driving Alertness, Mood and Workload	2013	Northeastern University, Boston, America	shows that Both cinnamon and peppermint administration led to increased ratings of alertness, decreased temporal demand, and decreased frustration over the course of the driving scenario.
3.	Study on Stimulation Effects for Driver Based on Fragrance Presentation	2011	Meijou University Japan	shows that fragrance presentation to drivers at the wheel can induce wakefulness and peppermint presentation is suggested to be the most effective.
4.	Effects of Sleep Deprivation and the Odor of 100% Lavender Oil and 100% Peppermint Oil on Unexpected Situation while Driving	2013	Konkuk University, Korea	shows that the peppermint odor has a statistically significant difference on the change in driving performance comparing sleep deprivation.

BIL	RESEARCH TITLE	YEAR	UNIVERSITY	FINDINGS
5.	Effects of Continuous Intake of Rosemary Extracts on Mental Health in Working Generation Healthy Japanese Men: Post-Hoc Testing of a Randomized Controlled Trial	2020	Faculty of Medicine, University of Tsukuba, 1-1-1 Tennodai, Tsukuba 305-8575, Japan	Based on these results, it was expected that rosemary extracts were effective for improving the mental energy and sleep quality of work-age men with poor mental health.
6.	Single doses of Panax ginseng (G115) reduce blood glucose levels and improve cognitive performance during sustained mental activity	2005		Overall, these data suggest that <i>Panax ginseng</i> can improve performance and subjective feelings of mental fatigue during sustained mental activity. This effect may be related to the acute <u>gluco</u> -regulatory properties of the extract.
7.	The acute effects of Red Ginseng on working stress of nursing staff at the care hospital for the aged (ROUJIN BYOUIN)	1998		Thus, we concluded that Red Ginseng could improve mental and physical stress of working female at her duty by its regulating effects of homeostasis
4.	The Effect of Inhaling the Aroma of Rosemary Essential Oil on the Pre-Hospital Emergency Personnel Stress and Anxiety: A Quasi-Experimental Study	2013	Nursing and Midwifery College, Birjand University of Medical Sciences, Birjand, Iran	Aromatherapy with rosemary essential oil can have positive effects in reducing stress and anxiety in pre-hospital emergency personnel.

PRESENTATION SLIDE

<https://docs.google.com/presentation/d/1eC5Ty1aeOKJ6ZPwZctsd1HEmo54z3abk/edit?usp=sharing&ouid=109900905823283521368&rtpof=true&sd=true>

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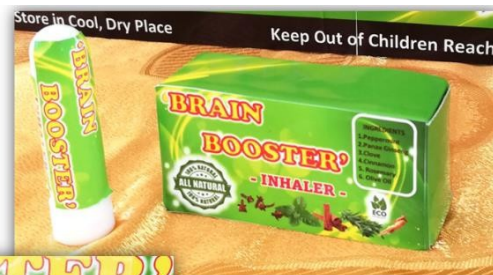
Raudenbush, B., Grayhem, R., Sears, T., & Wilson, I. (2009). Effects of peppermint and cinnamon odor administration on simulated driving alertness, mood and workload. *North American Journal of Psychology*.

Mahachandra, M., Yassierli, & Garnaby, E. D. (2015). The Effectiveness of In-vehicle Peppermint Fragrance to Maintain Car Driver's Alertness. *Procedia Manufacturing*. <https://doi.org/10.1016/j.promfg.2015.11.064>

Rao, P. V., & Gan, S. H. (2014). Cinnamon: A multifaceted medicinal plant. *Evidence-Based Complementary and Alternative Medicine*.



**BRAIN BOOSTER
'SPRAY'**



**BRAIN BOOSTER
'INHALER'**



e ISBN 978-967-2948-56-8

