



## RESEARCH ARTICLE

# Smart Energy Drink Natural Nano Formulation for Energy and Memory

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## Abstract

The present patent–pending invention relates to an herbal nano mix for enhancing energy and memory. The herbal mix extract for treating this problem is formed of a natural nano herbal mix, ginger, ginseng, ginkgo biloba, rosemary, Jenin thyme and gotu kola or extract of them. In particular the formulation is given orally in capsules or mixed with chocolate, gum, ice cream or carbonated beverages. Observed results showed excellent results for both energy and memory with no adverse or side effects.

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## 1 | BACKGROUND OF INVENTION

### The market situation and trends

While the international market is full of chemical energy harmful drinks some established nutritional markets, like dietary supplements, have been growing more slowly than they did in the 1990s, specific other segments (such as functional beverages) are increasing strongly. In the functional food category, functional beverages are the fastest growing segment. In the forefront of consumer interest, are substances with anti-aging, energy enhancement, or relaxing, effects.

### Energy Drinks Side Effects

A new hazard for adolescents is the negative health effects of energy drink consumption. Adolescents are consuming harmful energy drinks at an alarming amount and rate. Many side effects that have been reported by adolescents include jitteriness, nervousness, dizziness, the inability to focus, difficulty concentrating, gastrointestinal upset, and insomnia. Health care providers report that they have seen the following effects from the consumption of energy drinks: dehydration,

accelerated heart rates, anxiety, seizures, acute mania, and strokes. School nurses are in a unique position to teach adolescents about the side effects and possible health issues that can occur when energy drinks are consumed.

There is a very big need for safe and effective botanical beverages for energy enhancement.

## 2 | TREATING STUDENTS ENERGY AND MEMORY IN SCHOOLS AND UNIVERSITIES

The market size of energy drinks is very huge; for example Red Bull annual sales are more than \$9.8 and the market is very hungry for a safe effective product like ours.

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Moreover all students worldwide are waiting a natural safe and effective product for memory enhancement to improve their academic records.

### 3 | SUMMARY OF THE INVENTION

The present invention relates to an oral natural formulation for treatment of enhancing energy and memory. The formulation for treating energy and memory is formed of a natural nano herbal mix, ginger, ginseng, ginkgo biloba, rosemary, Jenin thyme and gotu kola or extract of them.

In recent years, studies (1) have shown that ginger may have effects on appetite, thermogenesis, and gastric motility. Due to these effects, the present study aimed to review of studies evaluating the effect of ginger on energy metabolism and obesity. Among 1428 studies, Literature shows that ginger may have important effects on energy metabolism and obesity in animal models via decreased carbohydrate and lipids oxidation, increased nerve activity, changes in hormone (leptin, insulin) and enzymes (amylase, lipase).

Regulation of balance between lipid accumulation and energy consumption is a critical step for the maintenance of energy homeostasis. It was shown (2) that Panax red ginseng extract treatments increased energy expenditures and prevented mice from diet induced obesity. Panax red ginseng extracts strongly activated Hormone Specific Lipase (HSL) via Protein Kinase a (PKA).

A growing volume of data (3) confirms that Ginkgo biloba extract (GBE) reduces oxidative stress and improves mitochondrial respiration and thus may be useful in preventing or slowing down the progression of AD. Treatment of *Caenorhabditis elegans* with GBE- extract reduces oxidative stress and extends median lifespan compared with controls. Levels of reactive oxygen species, including the superoxide anion radical, were reduced in brains from GBE-treated mice compared with controls. In older mice, GBE resulted in a protective effect by increasing production of adenosine triphosphate in neurons.

In an experimental study (4), thirty-two middle-aged male Wistar rats were fed by different doses

(50,100 and 200 mg/kg/day) of RE (containing 40% carnolic acid) or distilled water for 12 weeks. The effects of different RE doses on learning and spatial memory scores, hippocampal neuronal survival, antioxidant enzymes and lipid peroxidation amount were evaluated

It seemed that RE (100mg/kg) could recover the spatial memory retrieval score ( $p < 0.05$ ). The amount of activity of SOD, GPx and CAT enzymes in the hippocampus of animals of the RE (100mg/kg) group showed a significant increase compared to the normal group ( $p < 0.01$ ), ( $p < 0.01$ ) and ( $p < 0.05$ ), respectively. Also, the amount of activity of GPx in the RE (50 mg/kg) group of animals showed a significant increase compared to the normal group ( $p < 0.05$ ). No significant difference was found between the groups in the MDA level.

The protective and therapeutic effects of thymol (main monoterpene phenol found in thyme essential oil) were examined (5) on a HFD-fed rat model of AD. Forty adult male Wistar rats were randomly assigned to 5 groups:( $n = 8$  rats/group): group 1, control, consumed an ordinary diet, group 2 consumed a HFD for 8 weeks, then received phosphate-buffered saline (PBS) via intrahippocampal (IHP) injection, group 3 consumed HFD for 8 weeks, then received beta-amyloid ( $A\beta$ )1–42 via IHP injections to induce AD, group 4 consumed HFD for 8 weeks, then received  $A\beta$ 1–42, and was treated by thymol (30 mg/kg in sunflower oil) daily for 4 weeks, and group 5 consumed HFD for 8 week, then received  $A\beta$ 1–42 after what sunflower oil was administered by oral gavage daily for 4 weeks. Biochemical tests showed an impaired lipid profile and higher glucose levels upon consumption of HFD, which was ameliorated by thymol treatment. In behavioral results, spatial memory in group 3 was significantly impaired, but groups treated with thymol showed better spatial memory compared to group 3 ( $p \leq 0.01$ ). In histological results, formation of  $A\beta$  plaque in hippocampus of group 3 increased significantly compared to group 1 and group 2 ( $p \leq 0.05$ ), but group 4 showed decreased

A $\beta$  plaques compared to group 3 ( $p \leq 0.01$ ). In conclusion, thymol decreased the effects of A $\beta$  on memory and could be considered as neuroprotective.

Centella asiatica (6) has been considered as brain tonic due to its wide beneficial neuroprotective activity. Besides this, various other effects such as anti-inflammatory, antiproliferative, anticancer, antioxidant, antiulcer, wound healing, etc. have been reported. These effects were tested on animal model and various phytochemicals such as asiatic acid, asiaticosides, polyphenolic compounds, etc. are proven effective for these responses. The herb is also tested for its toxicity and interactions with other drugs. Anticonvulsant drugs were found to interact with C. asiatica and also toxicological study suggested its use with cautions over long period of time. Also, various commercial products are available throughout the world that has been majorly used for enhancing memory, antioxidant, skin nourishment, neuroprotective as well as dietary supplements. Further research work need to be done more on clinical as well as cultivation aspects.

#### 4 | EXAMPLES OF PRE-CLINICAL RESULTS

##### Tests in Malaysia

One hundred students in Klantan, Malaysia enrolled in Quran memorizing tests for 2 months using our smart energy drink. The results showed all students achieved 50% increase in memorizing in a short time.

##### Tests in United States

20 high school, 10<sup>th</sup> grade entered in a study using 2 cans of our smart energy drink daily for 4 weeks under the supervision of Greater Chicago Medical Association and all got higher GPA and some of them got full marks in some tests for the first time in their life.

##### Tests in Jordan

100 high school students entered a study to investigate effect of our smart energy drink for one

term. All felt energetic all day long besides they increased their academic GPA by 7 to 9 grades.

#### 5 | SAFETY AND TOXICITY STUDY

Toxicity study performed on mice in the animal house of Jordan University of Science and Technology showed that the formulation is safe and free of side on different organs (attached)

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##### Analysis of Toxicological effect of natural mix smart energy DRINK & THINK

##### Methods:

- Two groups of mice, each of 10 were used
- Proper amount of the tested extract was used. The extract base without the active ingredient was used to the control group
- After 0, 6, 12, 18, days blood was collected by heart puncture or tail tip from all mice using EDTA tubes
- The following tests were performed:
  - A. Physical activity of general appearance
  - B. Pathological tests: after dissection of animals at the end of the exp. The following organs were examined: liver, pancreas, adrenal gland, heart, liver, and spleen
  - C. Haematological tests including RBCs & WBCs count.
  - D. Biochemical tests including: glucose, triglyceride (TG), cholesterol, Uric acid, creatinine, ALT, AST, amylase, Total bilirubin

#### 6 | RESULTS

**Table.1:** Glucose (mg/dL)

Days	0	6	12	18
Control	116 $\pm$ 8	119 $\pm$ 9	120 $\pm$ 10	118 $\pm$ 12
MC10	110 $\pm$ 11	115 $\pm$ 12	117 $\pm$ 8	115 $\pm$ 8

**Table.2:** Cholesterol (mg/dL)

Days	0	6	12	18
Control	73 $\pm$ 10	75 $\pm$ 8	78 $\pm$ 9	80 $\pm$ 10
MC10	70 $\pm$ 10	73 $\pm$ 9	77 $\pm$ 9	76 $\pm$ 10

**Table.3:** TG (mg/dL)

Days	0	6	12	18
Control	172±25	168±30	180±35	190±35
MC10	180±30	178±25	186±28	191±33

**Table.4:** Total bilirubin

Days	0	6	12	18
Control	0.32±0.1	0.33±0.1	0.33±0.1	0.35±0.1
MC10	0.3±0.1	0.3±0.1	0.34±0.1	0.36±0.1

**Table.5:** Creatinine (mg/dL)

Days	0	6	12	18
Control	1±0.1	0.9±0.2	1.1±0.2	0.9±0.2
MC10	0.9±0.2	1±0.3	1.1±0.4	1.3±0.4

**Table.6:** Uric acid (mg/dL)

Days	0	6	12	18
Control	9.3±1.1	8.8±1.4	8.9±1.5	9.1±1.3
MC10	9.5±1.5	8.7±1.2	8.5±1.5	8.3±1.1

**Table.7:** Amylase (U/L)

Days	0	6	12	18
Control	813±80	804±10	790±9	780±8
MC10	930±12	960±13	870±9	910±9

**Table.8:** ALT (U/L)

Days	0	6	12	18
Control	95±15	90±18	85±20	92±15
MC10	95±15	92±18	90±20	85±20

**Table.9:** AST (U/L)

days	0	6	12	18
Control	108±12	102±10	92±13	95±10
MC10	110±12	85±15	75±15	45±10

**Table.10:** Weight (gm)

Days	0	6	12	18
Control	20.4	22.1	24.3	26.6
MC10	20.2	23.2	25.1	26.8

**Table.11:** Hematology (RBCs \* 10<sup>6</sup> /mm<sup>3</sup>)

days	0	6	12	18
Control	5.7±0.6	6.2±0.5	5.8±0.7	5.6±0.5
MC10	5.5±0.5	5.6±0.7	5.7±0.6	5.9±0.6

**Table.12:** (WBCs \*10<sup>3</sup> /mm<sup>3</sup>)

Days	0	6	12	18
Control	5.2±0.3	4.6±0.4	6.1±0.6	5.8±0.6
MC10	5.1±0.4	5.3±0.5	5.6±0.4	5.5±0.5

**Physical activity:** The group of mice which received the herbal extract did not exhibit any remarkable difference in general appearance, but they were very active throughout the study and showed high physical activity compared to the control group.

**Table.13:** Summary of results

#	Parameter tested	Comment
1	Physical activity and general appearance	No effect
2	Weight gain and water consumption	
3	Pathological examination after dissection	No macroscopic changes could be observed
4	Hematology	
4.1	RBCs	No significant changes observed
4.2	WBCs	No significant changes observed
5	Biochemical tests	
5.1	Glucose	No significant changes observed
5.2	Cholesterol	No significant changes observed
5.3	TG	No significant changes observed
5.4	Creatinine	No significant changes observed
5.5	Uric acid	No significant changes observed
5.6	Total bilirubin	No significant changes observed
5.7	ALT	No significant changes observed
5.8	AST	Significant decrease was observed
5.9	Amylase	No significant changes observed

## 7| CONCLUSION

This patented botanical nano formulation is expected to help billion students worldwide. Double blind is still needed to give more reliable results.

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None.

### Conflict of interest

The authors declares there is no conflict of interest.

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