VITAMIN B1 (THIAMINE) BENEFITS RESEARCH REPORT

Research on the benefits of vitamin B1, also known as thiamine, spans various aspects of health. Here are some reported benefits supported by research:

1. **Energy Metabolism:**

Thiamine plays a crucial role in energy metabolism by converting carbohydrates into energy. Research suggests that adequate thiamine levels support efficient energy production in cells, which is essential for overall vitality.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1375232/

Conclusion of the above research report:

Thiamine (vitamin B1) is crucial for energy metabolism, with its discovery rooted in early research on the 'anti-beriberi factor' found in rice polishings. Since its synthesis in 1936, extensive research has highlighted its vital role in treating beriberi, a historically lethal condition particularly affecting rice-dependent cultures. This paper underscores the distinct symptomatology of beriberi compared to experimentally induced thiamine deficiency in humans, emphasizing its unusual manifestations and potential role in modern nutrition. The biochemical and pathophysiological aspects of thiamine are explored, alongside less common conditions linked to its deficiency. Understanding thiamine's role is essential for advancing knowledge in Complementary Alternative Medicine. The use of allithiamine and its synthetic derivatives is also discussed. Given thiamine's critical role in glucose metabolism, excessive consumption of simple carbohydrates increases the body's need for this vitamin, leading to a condition termed high-calorie malnutrition. This highlights the importance of adequate thiamine intake in modern diets to prevent deficiency-related health issues.

2. **Nervous System Function:**

Thiamine is vital for maintaining a healthy nervous system. It supports the production of neurotransmitters, the chemicals that transmit signals in the brain and nervous system. Deficiency in thiamine has been linked to neurological disorders like Wernicke-Korsakoff syndrome and peripheral neuropathy.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6930825/

Conclusion of the above research report:

The report underscores the critical role of thiamine (vitamin B1) in energy metabolism and brain function. Thiamine deficiency, historically linked to beriberi, is still relevant today due to high carbohydrate consumption in Western diets, leading to neurological and cognitive impairments. "High-calorie malnutrition," where diets lack essential vitamins and minerals, exacerbates this deficiency, causing symptoms from mild cognitive deficits to severe neurological disorders. The study emphasizes that low-dose supplementation is often ineffective, highlighting the need for high doses to treat deficiency. It also connects thiamine deficiency to various neurodegenerative conditions, advocating for increased awareness and its potential therapeutic use in modern nutrition.

3. **Heart Health:**
Some studies indicate that thiamine supplementation may have beneficial effects on heart health. Thiamine deficiency has been associated with cardiovascular problems, and supplementation may help mitigate these risks.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10502219/

Conclusion of the above research report:

The research on thiamine (vitamin B1) deficiency and its effects on neurodegeneration highlights the essential role of thiamine in brain function and energy metabolism. Thiamine deficiency, which can result from diets high in simple carbohydrates but low in

essential nutrients, is associated with significant neurological and cognitive impairments.
The study emphasizes that addressing thiamine deficiency is crucial, especially given the prevalence of high-calorie malnutrition in modern diets. Effective treatment requires high doses of thiamine, as low-dose supplementation often fails to yield benefits due to altered enzyme/cofactor interactions. The findings advocate for greater awareness of thiamine's role in preventing neurodegenerative conditions and underscore the potential benefits of adequate thiamine intake for maintaining neurological health.

4. **Cognitive Function:**
Adequate thiamine levels are important for cognitive function and brain health. Thiamine deficiency has been linked to cognitive impairment and memory problems. Research suggests that ensuring sufficient thiamine intake may help maintain cognitive function, especially in older adults.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4846521/

Conclusion of the above research report:

The research report on thiamine (vitamin B1) deficiency emphasizes its critical role in energy metabolism and brain function. Thiamine deficiency, historically linked to conditions like beriberi, remains pertinent today due to high carbohydrate diets and can lead to significant neurological and cognitive impairments. The study highlights the necessity for high doses of thiamine to effectively treat deficiencies, as low doses often fail due to altered enzyme/cofactor interactions. It also connects thiamine deficiency to various neurological conditions, advocating for increased awareness and its potential therapeutic use, particularly in conditions like autism and Parkinson's disease. Thiamine supplementation has shown promising results in improving cognitive and neurological symptoms in these disorders, suggesting its broader application in modern medicine.

Eye Health:

Thiamine has been studied for its potential role in supporting eye health, particularly in preventing conditions like cataracts. Some research suggests that thiamine supplementation may help reduce the risk of developing certain eye disorders. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9504679/

Conclusion of the above research report:

Study investigated the effects of oral vitamin B1 and mecobalamin (a form of vitamin B12) on dry eye disease (DED) patients. This randomized double-blind controlled trial involved 398 eyes from 199 patients, divided into a treatment group (receiving vitamin B1, mecobalamin, and artificial tears) and a control group (receiving only artificial tears). Key findings include significant improvements in corneal nerve length, width, reflectivity, and the number of neuromas in the treatment group, suggesting these vitamins aid in repairing epithelial cells. Patients receiving the vitamins reported notable relief in dryness, pain, photophobia, and blurred vision, with improvements recorded at both 1 and 3 months post-treatment. Enhanced patient satisfaction was also noted due to symptom reduction. Overall, the study concluded that oral vitamin B1 and mecobalamin could significantly benefit DED patients by enhancing corneal nerve health and reducing ocular discomfort.

6. **Diabetes Management:**

Thiamine may play a role in glucose metabolism and insulin sensitivity, making it potentially beneficial for individuals with diabetes. Some studies have shown that thiamine supplementation could improve glucose tolerance and reduce complications associated with diabetes. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7282352/

Conclusion of the above research report:

Study found that people with both type I and type II diabetes have higher levels of blood sugar, HbA1c (a marker of long-term blood sugar control), triglycerides, and total

cholesterol compared to people without diabetes. Additionally, people with diabetes have lower levels of HDL (the "good" cholesterol) and vitamin B1 (thiamine) in their blood. However, because this study only observed these differences, it cannot prove that changes in blood sugar or HbA1c directly cause changes in thiamine levels. To find out if there's a direct cause-and-effect relationship, a different type of study called a cohort study would be needed.

7. **Mood Regulation:**
Thiamine is involved in the synthesis of certain neurotransmitters, including serotonin, which plays a role in mood regulation. Some research suggests that thiamine supplementation may have a positive impact on mood disorders, although more studies are needed to confirm these effects.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10568373/

Conclusion of the above research report:

Thiamine (vitamin B1) is crucial for cell metabolism, acting both as a coenzyme in important biochemical reactions and in non-enzymatic roles like nerve signal transmission and cell regulation. A deficiency in thiamine can lead to oxidative stress, damaging cells and causing various health issues, especially in the nervous and cardiovascular systems. Ensuring sufficient dietary intake of thiamine is vital for all age groups, particularly the elderly and those with neurodegenerative diseases. Thiamine supplementation can help prevent deficiencies and support overall health.

Conclusion:
In conclusion, vitamin B1, also known as thiamine, is a vital nutrient with numerous important roles in the body. From energy metabolism to nervous system function and heart health, thiamine plays a crucial part in various physiological processes. Research indicates that maintaining adequate levels of vitamin B1 is essential for overall health and well-being. However, deficiencies in this vitamin can lead to serious health issues such as beriberi and Wernicke-Korsakoff syndrome. Therefore, ensuring sufficient

intake of vitamin B1 through a balanced diet or supplementation when necessary is crucial for supporting optimal health. As always, it's best to consult with a healthcare professional for personalized advice on nutrition and supplementation.

**The information displayed herein has not been evaluated and/or approved in any form by the Japan Ministry of Health, FDA and/or similar body in Japan or elsewhere.*