



## Review Article

# Facts and Beliefs in childhood migraine and nutriments

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### ABSTRACT

There are various ways to look at the association between migraines and nutriments. The way you live and, in particular, how you eat can have a big influence on how your child's migraines progress. Furthermore, some dietary therapies, such as the keto diet, and some active substances found in food supplements (Bioceuticals), might have a migraine-treating impact. The intensity of migraines can be reduced by eating a diet that prevents obesity. When it comes to the relationship between diet and headaches, however, it's important to note that some popular information is really false news with no scientific backing. The purpose of this review is to clear the facts and beliefs regarding the link between migraine and nutriments.

### INTRODUCTION

Migraine is a frequent neurological disorder that impacts children and adolescents. Migraines may be extremely debilitating due to their intensity and frequency. Migraine is complex, including genetic, neurological, and vascular processes. Environmental elements that may have an impact on the outcome of the race include: Nutriment is the most debated topic in scientific circles.[1,2] There is a strong discussion over how specific meals might serve as beneficial or protective aspects in migraine episodes. A poor diet appears

to encourage migraine development and is linked to more severe manifestations of the condition.[3] This is very true for obese people and has a pro-inflammatory condition. Finally, it is critical to emphasize that attention to nutrition and dietary variables can have significant therapeutic consequences in children.[4] Details on the ketogenic food and certain bioceuticals for migraine therapy in adults and kids are found in this article.

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The influence of nutrition on migraine also offers possibilities for future treatment methods, ranging from dietary modifications to the development of synthetic medicines for migraine prophylaxis.[5] We will also concentrate on the role of nutriment in childhood migraines, weighing the benefits and

drawbacks of a putative link between nutrition and migraine intensity. Our goal is to separate what has been scientifically proven in this subject (Facts) from what is frequently accepted without question, even when no scientific foundation (Beliefs).

**Table 1: The most important "Facts" and "Beliefs" about the migraine–nutriment connection.**

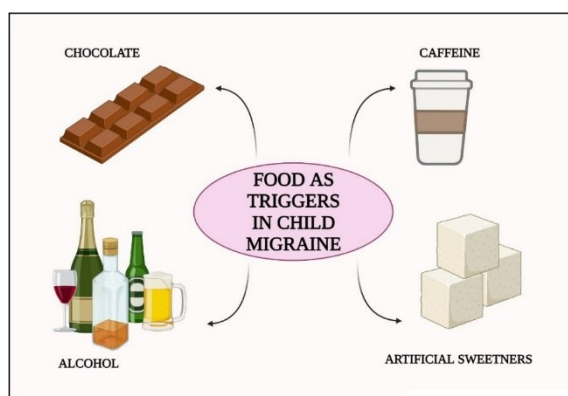
Questions	Facts	Beliefs
Can certain food supplement cause a migraine ?	<ul style="list-style-type: none"> <li>• Some people may experience migraine episodes that are provoked by certain meals.</li> <li>• Not every pro-migraine food supplements will cause a migraine episode in every migraine sufferer.</li> <li>• Monosodium glutamate as well as sweeteners which are artificial such as saccharine, aspartame and sucralose, caffeine, gluten, and biogenic amines have a pro-migraine impact.</li> <li>• Excluding certain meals without a strong doubt may not always help migraine sufferers.</li> </ul>	<ul style="list-style-type: none"> <li>• Migraine sufferers should entirely exclude trigger items such as chocolates and caffeine from their dietary menu.</li> </ul>
Is migraine a sign of a food allergic reaction?	<ul style="list-style-type: none"> <li>• There aren't enough studies.</li> <li>• Migraine and food allergies are 2 frequent childhood illnesses that can occur.</li> </ul>	<ul style="list-style-type: none"> <li>• Migraine might be a sign of a food supplement allergy on its own.</li> <li>• The Ig E-mediated allergic pathway has a role in migraine development.</li> <li>• Food allergies must be checked in every migraine sufferers.</li> </ul>
Any link between migraines and being overweight?	<ul style="list-style-type: none"> <li>• Obesity might worsen migraine symptoms by promoting the psychological issues that come with it.</li> </ul>	<ul style="list-style-type: none"> <li>• Being overweight is a well-known risk element for migraine onset.</li> <li>• Migraine intensity is usually reduced when body weight is reduced.</li> </ul>
Migraine treatment by following ketogenic diet	<ul style="list-style-type: none"> <li>• In grownup patients, a keto diet may be a beneficial treatment strategy, For those who require a Low-caloric diet to lose weight.</li> </ul>	-

<p>Bioceuticals</p>	<ul style="list-style-type: none"> <li>• Bioceuticals' effectiveness in the therapy of juvenile migraine is based on a small number of controlled studies.</li> <li>• The use of bioceuticals is typically well accepted.</li> </ul>	<ul style="list-style-type: none"> <li>• Artificial Bioceuticals and meals containing the active components have the same effect.</li> <li>• Bioceuticals are generally risk-free and have no negative side effects.</li> </ul>
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### 1) Food supplements as Migraine Triggering Factor in Children.

Dietary choices play a significant influence in the onset of migraines in kids and teenagers. According to multiple investigations done in both kids and grownups, the number of migraine sufferers identifying a specific food supplement as a migraine episode trigger ranges from 7- 45%, with many participants claiming different dietary triggers.[6,7] According to Neut et al., 32.3 percent of kids and teenagers with migraines indicated dietary trigger variables such as chocolate showed about 11.8 percent; whereas colas showed 8.8 percent; soft drinks triggered migraine about 3.9 percent, whereas citrus fruits, as well as cheese, showed about 3.9 percent trigger each.[8] Chocolates, caffeine, almonds, beverages containing alcohol (particularly red wine and beer), milk, citrus fruits, and cheese are among the

food supplements and drinks that have been linked to migraine episodes.[9] Dietary variables might cause migraines by affecting neuro-peptides, neuro-receptors, as well as ion channels. Dietary triggers' impact on migraine sufferers may be affected by dose, time of exposure, and hereditary variables. [10,11] It's conceivable that a single trigger isn't enough to cause a migraine episode, that is why migraine sufferers generally have numerous food triggers. To summarise, the relationship between diet and migraine episode is still unknown, and not every pro-migraine food supplement will cause a headache outbreak in all migraine sufferers. As a result, migraine sufferers should not skip all of the items we will discuss later unless there is a strong link between these variables and their headaches can be established.[12,13]



**Figure 1: Food as triggers in child migraine**

**i. Chocolates** Near about 2%–22 % of adult migraine sufferers, chocolates are discovered as headache trigger. A planned

observational case series was conducted with the target of evaluating where it was revealed that chocolates are a trigger cause in 22-25% of

kids in a investigation evaluating the impact of excluding commonly eaten items from a group of kids with headaches.[14] While numerous research have shown a link between chocolates and childhood migraine, the physiological processes behind this association remain unknown. Flavanols, a kind of polyphenol found in chocolates, are one of them. Chocolate also includes phenylalanine, which has vasoconstrictive characteristics and can cause a migraine by altering cerebral blood circulation and causing sympathetic nerve cells to produce norepinephrine.[15,16] An rise in serotonin levels is another way through which chocolates can cause headaches.[17]

- ii. **Caffeine** Caffeine is considered a popular psychostimulant utilized in the market. Dietary items like tea, coffee, chocolates, and caffeinated beverages include it. Children, particularly teenagers, utilize substantial amounts of caffeine-containing beverages at regular intervals. While the link between coffee and migraine is well-studied in adults, a scarcity of evidence in kids and teens. Caffeine is linked with migraines, either as a therapy or as a cause.[18] Caffeinated drugs, either individually or partnered with analgesics such as aspirin, acetaminophen, are beneficial to headache sufferers.[19] Caffeine might cause headaches in 2 different ways: by ingesting caffeine containing beverages, which can stimulate a migraine episode, or by detoxing from caffeine after a long period of consumption. Headaches can start as soon as 12 to 24 hours after ceasing to use caffeine, peak at about 20 to 51 hours, and continue for around 10 days.[20,21]
- iii. **Alcohol** According to a study, kids and teens aged 10-17 years ingested 25-30% of alcohol in the USA, comprising of wines, beers, and spirits. Given the truth that 29–36 percent of migraine sufferers claim that drinking triggers

their episodes.[22,23] Even in children, alcohol must be considered as a dietary variable that might trigger a migraine. Despite the frequent utilization of alcohol among teenagers, there is no research examining alcohol as a migraine triggering factor in children. Several adult research discovered that a significant majority of patients thought red wine was a common alcoholic drink trigger for migraine. Another investigation suggests that white wines, sparkling wines, spirits, and beers might be commonly associated with migraine episodes.[24,25] The process causing alcohol-induced headaches is yet unknown, however it is considered to be complex and involves various chemicals such as histamine and flavonoid phenol.[26]

- iv. **Aspartame and Nitrites** In certain people, aspartame which is found in many foods and beverages can cause headaches. Aspartame intake has been linked to neurological and behavioural issues such as headaches (45 percent), dizziness (39 percent), memory loss (29 percent), and sleeplessness (29 percent). (14 percent). Various research has looked at the effects of aspartame on the body. There was no variation in headache incidence between those who were exposed and those who were not to either aspartame or a placebo. 2 people had headaches after utilizing rizatriptan melting tablets, which included aspartame as an additional ingredient, according to Newman and Lipton.[27,28,29] Preservatives like nitrites are commonly utilized in meats such as sausages, pork, and luncheon meats. In the past few years, there has been less research on nitrites causing migraines. According to research, 5 percent of migraine sufferers are more likely to experience an episode after ingesting nitrites. Nitric oxide causes vasodilation in the vascular endothelium, which can trigger migraine episodes.[30]



## 2) Migraine and Food allergy

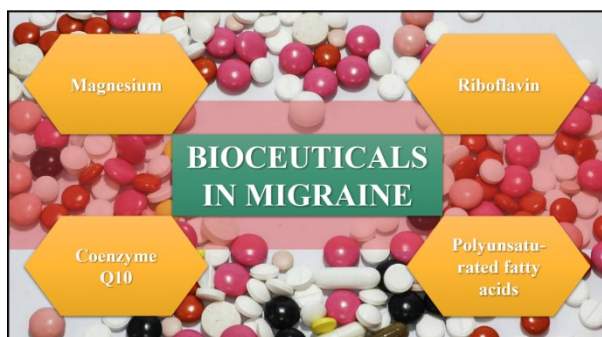
Food allergy is a response that is allergic to dietary-induced by an aberrant immunological reaction that responds to protein-based food ingredients.[31] Dairy products, egg, nuts, seafood, and soy food in kids, and fish, soy food, vegetables, and fruits in grownups, are the foodstuffs that result in the preponderance of allergy. The relationship between migraine and food allergy is contentious, arousing both public and medical curiosity. [32] Numerous adult investigations have tried to find out if there are any links between food allergies and migraines, and if oligoantigenic diets can help. Migraine sufferers improved after eating an oligoantigenic diet, which is thought to be owing to an immunological process including the elimination of antigens as well as the removal of the high levels of amines found in these foodstuffs. Experimental investigations, on the other hand, do not support this notion. Other researchers discovered contradictory evidence.[33] We might infer that, while some meals are recognized as a migraine trigger, and some dietary regimens may be

beneficial for migraine therapy, food allergies cannot be regarded as an etiology of migraine.

## 3) Keto diet for childhood migraine

Even in children, the Keto Diet (KD) is a healthy and well treatment strategy for a variety of metabolic diseases, particularly epilepsy. The ketogenic diet can reduce neuroinflammation, oxidative damage, and free radical production, all of which are factors in migraine pathogenesis.[34] In grownups, a keto diet can be a better option, especially for those who need a low-calorie diet to lose weight. Several investigation have been reported, indicating the keto diet's potential effectiveness, especially in children. There is just 1 prospective study documenting the failure treatment of a group of eight teenagers, although it must be noted that they were treated with a revised Atkins Diet, which is a lesser stringent diet that does not follow the same rigid guidelines as the conventional keto diet. At this time, no research has been done on the impacts of a traditional keto diet in kids and teens with chronic migraines.[35,36]

## 4) Bioceuticals



**Figure 2: Bioceuticals in Migraine**

Bioceutical is a phrase that combines the words "Biology" and "pharmacy," and it may be defined as "food, or portions of food, that give medical or health advantages, including illness preclusion and treatment." [37] When compared to standard pharmacological treatments, the utilization of bioceuticals for migraine prophylaxis in children finds its potential in the tolerance of these

substances and the minimal danger of adverse effects. Moreover, recently randomized research that found that the efficiency of some conventional medicines was no different than that of a placebo might have bolstered the usage of bioceuticals. Magnesium (Mg), riboflavin, coenzyme Q10, and polyunsaturated fatty acids (PUFAs) are the most often utilized Bioceuticals for migraine therapy.



Magnesium is the most researched compound for migraine therapy. It has a significant impact on neuronal function. At the mitochondrial level, coenzyme Q10 works as an energy drainer. The proof of a deficiency in mitochondrial activity in migraine sufferers justifies its usage. Polyunsaturated fatty acids (PUFAs) are used because of their anti-inflammatory properties and are used for migraine therapy.[38,39,40]

## CONCLUSION

To summarise, common views regarding the function of nutriment in paediatric migraine must be supported by scientific evidence, as science is the only instrument that allows us to accept such contributions as "Facts." If scientific proof is missing or opposes common views, blindly conveyed information, such as the function of chocolates as a migraine triggering factor, should be declared as a "Belief."

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