Is milk good for the brain? Essential nutrients for brain development

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Parents can introduce various recipes and foods that are rich in DHA and choline to their children. These are vital nutrients that support brain development.
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There is a reason why there are so many studies conducted and books written on the importance of nutrition for kids. A lot of focus is on brain development, and for good reasons. A healthy and well-developed brain lays down the foundation for the rest of your child's life.

This is a comprehensive nutrient guide for parents who want to know exactly what each nutrient contributes to a child's brain development:

1. Booster for language development - DHA

In the recent years, you might have heard a lot about DHA as a brain development booster. DHA stands for Docosahexaenoic acid, also known as "Brain food". It is a key omega-3 polyunsaturated fat.

DHA's reputation is not unfounded. DHA accounts for 30% to 45% of fat in the brain, 20% in cerebral cortex, and takes up to 50% of the retina. DHA forms the myelin sheath, which protects the cell membrane of optic nerves. There are 60% of phospholipids formed by DHA.

In short, DHA is critical for brain and retina development, which means that this chemical affects baby's IQ and vision greatly. According to studies, babies who consumed higher amount of DHA in the first 4 months after birth showed a higher

degree of performance in language assessments than those who didn't. It is, therefore, important to include sufficient DHA in your baby's diet for better language development.

DHA is essential for neuron cell growth and functioning. In other words, insufficient DHA means not having enough ingredients for the brain. This would affect the foundation of the brain which cannot be improved by training or knowledge.

There are approximately 100 billion neuron cells in the human brain. By the time a baby is born, the neuron cells have already reached this number. But neuron cells are baby sprouts that need to be provided with enough DHA. These sprouts can grow and reach their full potential only with the aid of DHA.

Neuron cells communicate with each other through synapses. New-born babies have less synapsis and by the age of 2, the number of synapses will increase immensely. The average number of synapses of each neuron cell is 15,000 which are 1.5 times more than adults. Enough DNA is required for the process of neuron development.

Advice for mums

Nutrient supply during key stages of your baby's growth is critical for baby's intelligence and language development. Providing DHA is the first step for baby's language development.

Research has found that breast milk contains natural DHA. If enough quantities of DHA are supplied to the mother, it would increase the DHA amount in the mother's blood. This would boost the child's intelligence before the child turns 18. According to a study, babies that feed on breast milk have the highest level of DHA in their brains. The longer the baby feeds on breast milk, the higher the DHA level.

According to World Health Organization (WHO), the ideal age of weaning is when the child is 2 years old. However, the DHA amount in breast milk depends on the types of food consumed by the mother. If the mother eats more fish, there would be more DHA in her breast milk.

If due to some reason a mother can't continue to breastfeed, or not enough breast milk is available, then experts suggest choosing formula milk rich in DHA. However, one should learn to read the ingredients chart before choosing any type of formula milk. The amount of DHA in formula milk should be close to the levels found in breast milk.

Fatty fish, such as salmon, tuna, and sardine are all high in DHA.

Nuts like walnut, almond, peanut and sesame are rich in α-Linolenic acid (ALA) will transforms into DHA in human body.

Algae are also rich in DHA.

Tips for mums

As mentioned above, fish is an important source of DHA. Dads and mums can choose the right fish in the right amount to supply DHA for your baby. One important thing to note is choosing the right cooking method so as to not destroy the DHA structure. Steam cooking has a better effect on fish when it comes to retaining DHA. During steam cooking, the fish oil will melt into the soup. If there's not too much soup after steam cooking, then not too much nutrient is lost. 90% of DHA and EPA are contained within the soup.

However, deep frying, grilling or pan frying may affect DHA levels more. In grilling, as the temperature rises, fat will be lost and destroyed. Grilling or long-duration cooking will reduce 20% of the DHA compared to fresh uncooked fish. Deep frying fish would cause DHA and EPA to reduce even more. Only 50% to 60% of DHA will remain after such high-heat cooking.

The remainder of DHA left after cooking (from high to low) is steam, boil, grill, and deep fry. We suggest that mums should avoid deep frying fish to retain as much DHA as possible.

2. The "memory key" in food – Choline

Choline is an organic ammonium salt, which appears in breast milk and a lot of natural food. Choline helps form the acetylcholine (ACH), which is an important neurotransmitter memory process.

Advice to mums

ACH is very important for helping the brain function at its highest efficiency. ACH is similar to the "messengers" between neuron cells. Messages can only be delivered normally when ACH level in brains are regular. Babies' memory and responsiveness are also determined by the level of ACH, which affects their level of activeness in their brains. Choline is an essential precursor of ACH, which is an important neurotransmitter for memory function. The recommended intake of ACH is 125mg to 150mg per day.[1]

Babies can obtain ACH through the following food sources:

3. Breast milk-the Best food for babies

Breast milk is the best food for a baby. According to a study, the amount of ACH in breast milk is 16mg in every 100mg of breast milk. Experts' advice to continue breastfeeding until a baby is 2 years old. If due to some reason the mother can't

continue to breastfeed, or not enough breast milk is available, experts suggest such mothers to choose formula milk rich in choline.

Other food sources that are rich in Choline are: animal liver, egg yolk, red meat, dairies, bean product, peanut, citrus, potato, spinach, cabbage, and broccoli, among others. Mums, we suggest you to add these foods to your daily diet.

Tips for mums

The following are some delicious and easy to prepare Choline-rich recipes

Seaweed and egg drop soup

Ingredients: dried seaweed 5g, 1 egg, half a shoot of scallion, salt and sesame oil to your taste

How to make: Put dried seaweed in cold water to soften it. Boil 2 to 3 bowls of water, add the softened seaweed until boiled, then add egg and stir until boiled. Add salt and sesame oil before serving

Seaweed omelette

Ingredients: dried seaweed 5g, half an egg, canola 50g, and soy sauce to your taste.

How to make: wash and dry canola, boil in water for 5 minutes. Rinse it and chop to mouth-size bits. Sprinkle soy sauce on top and rinse the soy sauce. Use a flat pan and add vegetable oil; heat it up until medium heat. Pour egg onto the pan and make an omelette. Add the canola and seaweed onto the omelette. Roll it up and chop it to mouth-size pieces.

Yam meatball vegetable soup

Ingredients: yam, pork, green vegetable, a pinch of salt.

How to make: grind pork, and chop the greens to tiny bits. Use a food processor to grind yam into gooey texture. Pour yam goo into grind meat, and stir in the greens. Add a bit of flour; continue stirring the yam-pork mixture until it’s sticky. Boil water or broth, use a small spoon to scoop the mixture into balls then cook in boiled water. Slowly simmer until cooked. Sprinkle a bit of chopped vegetable on top.

Egg yolk porridge

Ingredient: 2 teaspoons of rice, water 100ml, ¼ of hard-boiled egg yolk.

How to make: wash the rice, having soaked it in clean water for 1 to 2 hours. Cook in

low heat for 40 to 50 minutes. Add in ¼ of hard-boiled egg yolk, stir for 10 minutes before ready.

4. Brighten up your baby's eyes - Lutein

Besides DHA, Lutein is one of the most important ingredients for a baby's visual development. Though it is less discussed compared to the ever-popular DHA, Lutein is an antioxidant that protects the eyes against harsh blue light and forms an intense protective area in the macula (the oval shaped, functional centre of the retina).

Advice for mums

Lutein gives baby's visual development a "brightening boost". Breast milk contains natural Lutein, but if due to some reason the mother can't continue to breastfeed, or not enough breast milk can be expressed, we suggest choosing formula milk rich in Lutein. The amount of Lutein in formula milk must contain at least 4 times the amount that is found in breast milk. There's approximately 2µg/100ml of Lutein in breast milk. Besides breast milk, food that's rich in Lutein is corn, spinach, cabbage, broccoli, egg yolk, pumpkin and carrots. Lutein is also found in fruits like mango, kiwi, grapes and oranges.

5. Other Important nutrients

Besides Lutein, the following nutrients will also benefit your baby's visual development. Vitamin A - Foods rich in Vitamin A prevent dryness or degradation of the eye's membrane and cornea. It prevents and heals the "dry eye syndrome". Dry cornea has low level of defence capability against bacterial infection. When infected, it might cause eye festering, to the degree of losing eyesight.

Vitamin A also helps increase the visual ability in the dark. Lacking vitamin A in nutrition might cause night blindness. Overall, Vitamin A also helps to increase your baby's immunity.

Calcium - Not enough calcium in your baby's diet might lead to building up of pressure on the eyeball of your child, leaving the eye muscle in high tension. This would cause permanent damage to eyesight. Therefore, it's important that there's enough calcium in baby's diet.

Vitamin C - Vitamin C is an ingredient for the lens in the eyeballs. With insufficient vitamin C in the human body, it's very likely to develop cataracts.

Tips for mums

Food rich in Vitamin A includes liver, butter, whole-fat milk, and egg yolk. The Carotene in vegetables transforms into Vitamin A inside the human body. Foods rich in Carotene are carrots, pumpkins and all types of green vegetables.

Food rich in calcium are lean meat, milk, eggs, beans, fish, shrimp, seaweed, vegetables, and citrus. For a 1 to 3-year-old child, the daily consumption of calcium is 600mg. It is best if the calcium comes from milk and dairy products. Parents should consider feeding their kids formula milk with high quality Calcium which contains over 40mg of Calcium in 100ml milk.

Foods rich in Vitamin C are vegetables and fruits, especially green pepper, cucumber, canola, Chinese cabbage, jujube and pear.

Some important reminders

- Remember to protect your baby's eyes under the sunlight. UV light, especially blue rays (wavelength between 400 to 500 nm) is the high-intensity ray in visible light. It travels through cornea and lens, lands directly onto the retina. But mums, please note that overexposure to blue ray might harm the retina. Ultra violet rays and ultra-red rays are often absorbed by the cornea and lens of the eye. They cannot reach the retina.
- A baby has a clearer lens, which cannot filter rays efficiently like adults. They are more likely to be harmed by blue rays. It's critical to protect your baby's eyes from blue rays during your baby's visual development stage. Be extra careful that baby's eyes are sheltered from strong sunlight or flashlight. Also make sure that baby's diet includes nutrients that boost his or her visual development. For example, since lutein helps filter harmful blue rays, ensure sufficient lutein intake for your child.
- Additionally, note that the older your baby becomes, the more he/she will explore. They might run and jump fearlessly, which increases the chance of injuring their eyes. It's important to educate them not to run around with sharp objects in hand, such as pencils or chopsticks. Make sure your baby is away from household cleaning products to avoid getting the chemicals in their eyes, which might cause chemical burn on their eyeballs. If dust or other tiny objects got into their eyes, use clean wipes to gently remove it.

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