



**FASD-CAN**

Fetal Alcohol Spectrum Disorder  
Care Action Network

## FASD-CAN AOTEAROA INFORMATION SHEET

# FASD and Choline

### What is Choline?

Choline is an essential nutrient vital for brain development and daily bodily functions. While the body produces a small amount, we must obtain most of it through food or supplements.

### Why It Matters

- **Brain Building:** It is a precursor to *acetylcholine*, a chemical essential for memory, mood, and muscle control.
- **Cell Integrity:** It forms the structural components of cell walls.
- **Gene Regulation (Epigenetics):** It acts as a "methyl donor," helping to turn genes on or off, which is fundamental for healthy growth.
- **Liver Function:** It helps metabolise fats and prevents build-up in the liver.

### The Link Between Alcohol and Choline

While choline is a vital nutrient for **all** pregnancies to support the rapid development of the baby's brain and spinal cord, alcohol exposure creates a unique "functional choline insufficiency." This means that even if a pregnant person eats a standard healthy diet, alcohol consumption increases the body's demand for choline so much that a deficiency often occurs.

### How Alcohol Impacts Choline

1. **Direct Interference:** Alcohol disrupts how the body absorbs and uses choline.
2. **Redirection:** Alcohol exposure can divert choline toward processing fat in the liver, leaving less available for the baby's developing brain and DNA synthesis (the process of building the genetic "instruction manual" for every new cell in the baby's body).
3. **The "Shield" Effect:** Research indicates choline acts as a physical shield, helping to prevent cell death in the early stages of brain development (the neural tube) and protecting the cerebellum (responsible for balance and coordination).

### Research-Based Benefits for FASD

Studies involving both prenatal supplementation and early childhood intervention have shown promising, low-risk results:

- **Memory & Attention:** Systematic reviews (2025) show improved visual-spatial memory and global neurocognitive performance.
- **Brain Structure:** Choline may improve the organisation of "white matter" (the brain's communication pathways), particularly in the corpus callosum.
- **Executive Function:** Clinical trials have noted fewer ADHD-related symptoms and improved sustained attention.
- **Physical Growth:** Choline may help optimise brain development and protect against alcohol-related growth restrictions (low birth weight/small head size, etc).
- **Resilience:** It may act as a buffer against stress and help regulate sleep-wake cycles (circadian rhythms).

### Choline and Maternal Wellbeing

Choline is a critical component of a holistic wellbeing plan during pregnancy.

- **Maternal Health:** Adequate choline supports the pregnant person's liver health and helps manage metabolic stress. This is especially important when alcohol is present, as it places additional strain on the body's resources.
- **Prenatal Supplementation:** Because alcohol "diverts" nutrients, higher doses (under medical supervision) may be required to ensure the pēpi receives the building blocks needed for healthy Central Nervous System development.
- **Complementary Care:** Supplementation works best alongside other prenatal supports, such as adequate folate, stress reduction, and stable housing, to create the best possible environment for fetal development.



## Sources and Supplementation

While food is an important foundation, the levels used in research (450--900 mg/day) are often difficult to achieve through diet alone. Research indicates that many standard prenatal vitamins do not contain sufficient amounts of choline.

### ➤ Natural Food Sources

- **Excellent:** Egg yolks (one of the most concentrated sources), beef liver, chicken, salmon, and tuna.
- **Good:** Soybeans, kidney beans, milk, broccoli, Brussels sprouts, and quinoa.

### ➤ Supplement Types Used in Research

- **Choline Bitartrate:** The "gold standard" for FASD research. It is a salt that is well-absorbed and widely available.
- **Phosphatidylcholine (Lecithin):** Found in eggs/soy. Healthy, but contains less "free" choline than bitartrate.
- **Citicoline (CDP-Choline):** Used for adult brain health; not currently the focus for children with FASD.

## Important Considerations

### ✓ The "Critical Window"

Timing is vital. The greatest benefits are seen when choline is provided **prenatally** or during **early childhood (ages 2–5)**. While still beneficial, the effects may be reduced if started later in childhood (ages 5–10).

### ✓ Safe Use & Side Effects

Choline is considered low-risk, but higher doses should be monitored:

- **Fishy Body Odour:** Caused by the breakdown of choline. *Practical Tip:* Splitting the daily dose into 2 or 3 smaller amounts often stops this from happening.
- **Upper Limit:** Adults should not exceed 3,500 mg/day. Excessive intake can cause low blood pressure or sweating.
- **Sensory Needs:** For children with sensory sensitivities, choline bitartrate powder can be mixed into high-fat foods like yoghurt or peanut butter to mask the salty taste and aid absorption.

### ✓ Advocating for Your Child

If you are a caregiver, you may want to bring these questions to your GP or Paediatrician:

- "I have read recent research (e.g., Lino et al., 2025) regarding high-dose choline as a low-risk intervention for brain development in FASD. Can we discuss if this is appropriate for my child?"
- "Given the evidence for long-term improvements in brain wiring (Gimbel et al., 2022), can we monitor my child's progress alongside a choline-rich diet?"

### ✓ Hauora: A Holistic View

In Aotearoa, health is **Hauora**. Choline is one valuable tool for Tinana (physical health), but it works best when part of a wider plan that nurtures Hinengaro (mental health), Whānau (family), and Wairua (spirit). It is not a "cure-all," but a supportive building block to help pēpi and tamariki reach their full potential.

## A Final Note on Prevention

While choline is a powerful supportive nutrient, it is not a substitute for alcohol abstinence. Choosing not to drink alcohol during pregnancy remains the only certain way to prevent FASD. For those who have already experienced exposure, choline may provide a robust layer of protective support, but it is one part of a much larger journey of care and wellbeing.

## Summary Checklist:

- Consult a medical professional before starting any supplement regimen.
- Prioritise the "early window" (Pregnancy to age 5).
- Aim for research-standard Choline Bitartrate where appropriate.
- Check supplements for purity and third-party testing.
- Integrate choline into a stable, sensory-supported environment for the tamaiti.
- Ensure the pregnant person has a holistic nutrition plan to offset functional insufficiency.

**Medical Disclaimer:** This information sheet is for general knowledge and informational purposes only and does not constitute medical advice. Always consult with a qualified medical professional (GP or Paediatrician) before making decisions about your or your child's health or starting any new supplement regimen.

For more detailed information on this topic and research references, see our expanded website resource.

