

Choline in Pregnancy.

What is Choline and why is it important?

Choline is an essential nutrient responsible for a wide range of functions including cell formation and nerve function. During pregnancy, choline is especially important as it aids in:

- Reducing the risk of neural tube defects^{1,2}, as well as risk factors associated with preeclampsia³.
- Influencing the production of cortisol, which may reduce the likelihood of stress-related diseases for your child later in life, such as hypertension, obesity, diabetes and depression⁴.
- Eating choline rich foods during pregnancy may also be important for your child's brain development including information processing speeds, learning, memory and attention⁵.

How do I consume more Choline?

Foods such as red meat, poultry, fish, whole grains, dairy and green vegetables contain varying amounts of essential nutrient choline, but eggs provide more than double the amount of choline per 100g than any other choline source⁶.

A Choline-rich meal might look like:

Easy Fish Pie

 75 mins  Serves 8

INGREDIENTS

750g baby new potatoes, quartered
6 eggs
400g skinless salmon fillet, cut into 3cm pieces
400g skinless white fish fillet (such as snapper or basa), cut into 3cm pieces
250g tub light sour cream
¾ cup milk
1 teaspoon Dijon mustard
1 cup frozen peas, thawed
2 green onions, finely sliced
1 tablespoon chopped dill, plus extra to garnish
6 sheets filo pastry
60g butter, melted
Mixed greens, to serve
Lemon wedges, to serve

METHOD

1. Preheat oven to 200°C/180°C fan forced. Place a 10-cup capacity shallow baking dish (about 35cm x 28cm) on an oven tray to catch any spills.
2. Place potatoes in a large saucepan and cover with cold water. Bring to the boil. Add the eggs and simmer for 6 minutes. Use a slotted spoon to transfer eggs to a bowl of iced water. Continue cooking potatoes for 3-4 minutes, until tender. Drain well and roughly mash. Meanwhile, peel eggs and cut into quarters.
3. In a large bowl whisk sour cream, milk and mustard together. Add potato, salmon, fish, peas, green onion and dill. Season and mix well. Spoon into dish. Tuck in egg quarters.
4. For the topping, brush pastry sheets with butter then cut into 4 strips lengthways. Scrunch each strip into a loose ball and arrange on top of pie.
5. Bake pie for 25-30 minutes, until topping turns golden brown and filling bubbles up around the edges. Scatter with extra dill. Serve with mixed greens and lemon wedges.



References

1. Zhang, J. et al. Phosphatidylethanolamine N-methyltransferase (PEMT) Gene Polymorphisms and Risk of Spina Bifida. *Am J Med Genet A*. April 1; 140(7): 785-789 (2006).
2. Shaw, G.M., et al. Choline and Risk of Neural Tube Defects in a Folate-fortified Population. *Epidemiology*; 20:714-719 (2009).
3. Jiang X., et al. A higher maternal choline intake among third-trimester pregnant women lowers placental and circulating concentrations of the antiangiogenic factor fms-like tyrosine kinase-1 (sFLT1). *FASEB J*; 27: 1245-1253 (2013).
4. Jiang X., et al. Maternal choline intake alters the epigenetic state of fetal cortisol-regulating genes in humans. *FASEB J*. Aug;26(8):3563-74 (2012).
5. Caudill, M.A., et al. Maternal choline supplementation during the third trimester of pregnancy improves infant information processing speed: a randomized, double-blind, controlled feeding study. *FASEB J* [Epub ahead of print] (2018).
6. U.S. Department of Agriculture. USDA Database for the Choline Content of Common Foods Release Two, online document <https://www.ars.usda.gov/ARSUserFiles/80400525/Data/Choline/Choln02.pdf> [Accessed 21 July 2019]. 2008.

