Featured Topic: Choline and Folate (4 slides)
Choline and B vitamins for brain recovery after stroke

• New study looked at the role of choline and folate in association with brain damage caused by strokes in animals that had been fed a diet deficient in folate

• After the experiment began, half the animals were given increased amounts of folic acid plus additional choline, B12 and riboflavin while the remainder stayed on the folate deficient diet

• Results: versus animals on the folate deficient diet, animals that had increased folate, choline, riboflavin and B12 after suffering a stroke had
  – Increased motor function and movement
  – Reduced levels of homocysteine
  – Increased levels of antioxidants in the brain
  – Nearly 2.5 times increased levels of brain derived neurotrophic factor, a protein that stimulates new brain cell formation

• In a separate arm of the study, mice with a genetic deficiency that affects B vitamin metabolism also had poorer recovery after stroke
Are you a poor processor of choline and folate?

• The B family vitamins, choline and folate, are processed in the body along almost the same pathways
• Variations in the genes that control this pathway can make a person an efficient or a poor processor
• Up to **50% of Americans** have the genetic variations that make them poor processors of choline and folate
• Having the genes for poor choline and folate metabolism can lead to a **7 to 25 times increased risk** of symptoms of folate and choline deficiency
  • Getting enough, and in the **right forms**, is crucial
If you don’t get enough choline and folate

• Pregnancy issues
  – Risk of neural tube defects is 4 times higher in women with low choline levels
  – Risk of miscarriage increases up to 50% in women with folate deficiency
  – Children whose mothers took folic acid supplements during pregnancy are **39% less likely to suffer from autism**

• Fatty liver (choline helps transport fat OUT of the liver)
  – Up to 25% of the population already has problems with fatty liver

• Muscle damage

• Fatigue

• Brain fog and memory problems

• Increased risk of cancer
  – One study found a 24% reduction in risk of breast cancer in women with high choline levels
  – Increased intake of folic acid decreased risk of pancreatic cancer by 53%
Choline and Folate intake, and why the form matters

• The human body synthesizes very little choline, which is why it is essential to get it from food or supplements
  – Best food sources of choline: egg yolks, organ meats, wheat germ
  – **Recommended intake:** 425 mg/d for women, 450 mg/d for pregnant women, 550 mg/d for lactating women and 550 mg/d for men

• Folic acid is the synthetic form of vitamin B9 – it must go through 5 processing steps in the liver to convert to a form the body can use

• Look for **5-methylfolate** - the active form, no conversion necessary – 250 to 825 mcg daily
  – Combine choline and folate with thiamin, riboflavin, niacin, P-5-P, Vitamin B12 (methylcobalamin), and pantothenic acid
Eat the Whole Egg!
(1 slide)
Don’t be afraid of the yolk!

• Yes, egg yolks contain cholesterol
• BUT: dietary cholesterol from eggs does NOT “clog” blood vessels or increase your risk of heart disease
  – In 70% of people, egg consumption had NO effect on cholesterol, in 30% of people there was a very small increase in total cholesterol.
  – In one study, two eggs daily for 6 weeks increased HDL cholesterol by 10%!
  – More importantly, egg consumption has been shown to change dangerous small, dense LDL cholesterol particles to the large, “fluffy” and not dangerous form
• Egg yolks are rich in choline (9 out of 10 people don’t get enough choline in their diets) plus carotenoids, vitamins A, D, E, and K, and the B vitamins, selenium, iron and phosphorus
Colon Cancer Rates
(3 slides)
Colon and Rectal Cancer rates on the rise

- New study by the American Cancer Society finds the rate of colon and rectal cancers has increased dramatically, especially among millennials.
- Study finds that someone born in 1990 has double the risk of early colon cancer and quadruple the risk of early rectal cancer as someone who was born in 1950.
- Why the increase? Changes in the beneficial bacteria in the colon, which may be altered because of:
  - Excessive use of antibiotics in food animals
  - Environmental pesticides
  - Use and overuse of prescription drugs
  - Obesity
  - Increased intake of processed meats
  - Smoking
Young People – Pay Attention to Your Colon!

• If you have any of the following, especially if you also have digestive symptoms, see a healthcare provider
  – Loss of appetite or weight
  – Blood in your stool
  – Changes in your pattern of bowel movements

• When diagnosed early, colon cancer treatment is much more successful
Curcumin and Colon Cancer

• Curcumin has a **triple effect** against colon cancer
  – Protects against cancer cell formation in the presence of carcinogens
  – Inhibits proteins which cause cancer progression
  – Causes colon cancer cells to self-destruct

• In pre-clinical tests, curcumin enhanced the effects of chemotherapy drugs, making them more effective against cancer cells
  – Curcumin was able to induce cell death in colon cancer cells that were **resistant** to the chemotherapy drug
  – Curcumin also killed colon cancer stem cells
  – **THIS MEANS:** less of the toxic cancer drug is needed for beneficial effects; there is less risk of adverse effects or cancer reoccurrence

• Look for curcumin with turmeric essential oil containing turmerones, 750 mg daily