Kernels

Fall 2013

- Healthy Brains and What They Need
- A Whole New Start with Grains
- Plus: Two Great Recipes & U.S. Wheat Feeds the Hungry
The heart is a good example. Numerous studies clearly point to the role saturated and trans fats play in heart disease. On the other side of the dietary “plate,” we know that eating lean meats, fish, grains, fruits and vegetables all contribute to heart health, not to mention overall good health for the body as a whole.

It comes as no surprise then, that there is increasing attention being paid in the scientific community to the relationship between our diet and brain function. Noted food scientist Julie Miller Jones, PhD, LN, CNS, contributes an article explaining the science behind brain health and the role of complex carbohydrates in healthy brain function.

Registered dietitian, Victoria Shanta Retelny contributes a column on the components of wheat that make it a smart dietary choice and offers some tips on working power-packed whole wheat into your favorite recipes.

Summer is winding down and, with everyone going back to school and work, many of us must balance serving healthy meals with busy schedules. To help, we’ve included two hearty recipes that are easy to prepare and sure to please: Slow Cooker Lasagna with Italian Sausage, and Tortilla and Wheat Berry Bake.

We also cover the role of the U.S. wheat industry in eliminating hunger throughout the world – a truly lifesaving mission.

Happy reading!

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**FALL FOR GRAINS**

Looking for easy, yet delicious meals for busy, back-to-school nights this fall? Try a luscious lasagna or yummy baked tortilla casserole! The Slow Cooker Lasagna with Italian Sausage is a tasty, fix ahead meal, and the Tortilla and Wheat berry Bake is a snap to prepare. Both are hearty dishes for cooler autumn evenings.

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**Slow Cooker Lasagna With Italian Sausage**

**Serves 6**

**Ingredients**

- 8 ounces Italian turkey sausage, mild or spicy, removed from casing
- 1 medium onion, diced
- 2 cloves garlic, minced
- 2 tablespoons chopped fresh basil, or 1 teaspoon dried
- 2 ½ cups tomato sauce
- 1 large egg
- 1 cup part-skim grated mozzarella cheese
- ½ cup grated Parmesan cheese
- 8 pieces no-boil lasagna

**Directions**

In a large skillet, cook the sausage over medium-low heat, breaking it up as it cooks. Add the onion and garlic, and cook until the onion is translucent. Stir in the tomato sauce and basil, bring to a simmer and remove from stove.

In a medium mixing bowl, blend together the ricotta, egg, ½ cup mozzarella and the Parmesan cheese. Cover the bottom of a 2-quart slow cooker with ½ cup tomato sauce mixture. Breaking them up to fit, cover the sauce with 2 pieces of lasagna. Spoon 1/3 of the cheese mixture over the lasagna and cover with ½ of the remaining sauce. Break and add 2 more pieces lasagna, spoon on 1/2 of the remaining cheese and top with 1/3 of the remaining sauce. Add 2 more pieces lasagna and cover with the last of the cheese and half the remaining sauce. Cover with the last 2 pieces of lasagna and the last of the sauce. Cover, set to low-heat and cook for 6 hours. Sprinkle the remaining ½ cup mozzarella over the lasagna, turn off the cooker and let it sit for 15 minutes before serving.

Approximate nutritional value per serving:
- 380 calories; 17 g total fat; 7 g saturated fat; 95 mg cholesterol; 1080 mg sodium; 31 g carbohydrates; 3 g dietary fiber; 28 g protein; 27 mcg DFE (folate).

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**Tortilla And Wheat Berry Bake**

**Serves 6**

**Ingredients**

- 6 10" whole wheat flour or enriched flour tortillas (any flavor)
- 1 lb extra lean ground beef
- 1 cup cooked wheat berries (can be found on some supermarket salad bars or you can cook your own)
- 1 15-ounce can black beans, drained and rinsed
- 1 ½ cups frozen corn
- 1 ½ cups enchilada sauce
- 2 tablespoons chopped fresh cilantro – optional
- 2 cups grated cheddar or Monterey Jack cheese
- Toppings (optional):
  - Sour cream
  - Avocado or guacamole
  - Salsa
  - Chopped scallions

**Directions**

Preheat oven to 350 degrees F. Lightly coat the inside of a 9x13-inch baking dish with cooking spray. In a large skillet, brown the ground beef over medium-high heat. Drain. Stir in the wheat berries, black beans, corn, enchilada sauce and cilantro. Spread ½ cup of this mixture across the bottom of the baking dish. Cover with 2 tortillas. Top with 1/3 of the remaining wheat berry mix, 1/3 of the cheese and 2 more tortillas. Top with ½ the remaining wheat berry mix and ½ the remaining cheese. Cover with the last 2 tortillas and the last of the wheat berry mix. Sprinkle with the remaining cheese.

Bake 30 minutes, until bubbling around the edges and very hot throughout. Cut into rectangles and serve hot, with desired toppings.

Approximate nutritional value per serving:
- 520 calories; 17 g total fat; 6 g saturated fat; 60 mg cholesterol; 1330 mg sodium; 55 g carbohydrates; 10 g dietary fiber; 36 g protein; 4.6 mcg DFE (folate).
Smart fuel with the right additives is not only right for your car, it’s ideal for all our organs including our brains.

While the brain is only 3% of body weight, it is a fuel hog because it guzzles 20% of the fuel. And like a car, it functions best when its preferred fuel, glucose in the case of the brain, is supplied steadily.

Carbohydrate is the most efficient supplier of glucose with the key being glucose that comes without spikes and dips. Further, brain functioning is optimal when the diet provides not just the right fuel but also all the needed vitamins and other nutrients that optimize glucose utilization.[1]

Brain foods are healthy foods. In fact, diets that increase risk for heart disease, e.g. those high in saturated high fat, red meats and sweets, are associated with poorer cognitive performance and increased risk of dementia in later life. Luckily, known heart-healthy foods such as fish, fish oils and other healthy oils, nuts and legumes, low-fat dairy, dark and green leafy vegetables, fruits, and whole grains decrease the risk of cognitive decline and Alzheimer’s disease.[1-12]

Balance is the key for body and brain functioning. Diets containing all the food groups in a balance such as modeled in USDA’s MyPlate[13] or in diets listed in Table 1, lower the risk of all types of cognitive impairment. All such diets have 45-60% of calories coming from carbohydrate, and all recommend a mix of whole and enriched grains.

Most Americans fail to follow these recommended diet patterns despite their proven health and brain benefits. Sadly, only 3-8% of the population eat according to these patterns. Intakes of low-fat dairy, fruits and vegetables, legumes and whole grains are far below the recommendations. For example, only 1 in 10 meet the recommendation to make “half your grains whole.” Yet, over 90% of the US population from 2–70 years old, exceed recommended intakes for saturated fats and added sugars. Thus, authors of a recent dietary assessment by the National Cancer Institute, stated “nearly the entire U.S. population consumes a diet that is not on par with recommendations.”[14] The poor quality of the diet is troubling on several fronts, because it increases risk of chronic disease and also affects behavior and cognitive ability both for the short- and long-term.

Short-term variations in glucose availability to certain brain areas can impact mental performance, particularly for tasks that are demanding or of long-duration. Studies with youth demonstrate the effects of breakfast on school performance. While effects are inconsistent in well-nourished children, those students who have borderline diets score more poorly in a variety of mental activities.[15] Overall, good regular dietary habits help to ensure optimal mental and behavioral performance at all times.

While carbohydrates and glucose are important for brain functioning, elevated blood glucose (hyperglycemia) and extremely low blood glucose (hypoglycemia) are associated with a decline not just in short-term memory but also a variety of other measures of brain function.[20-27] Impaired carbohydrate metabolism as occurs in those with diabetes and other conditions of abnormal glucose tolerance is associated with mild cognitive decline. Long-term memory deficit is associated
with reduced glucose metabolism, elevated glycosylated hemoglobin, and impaired insulin signaling in certain areas of the brain. Such findings imply that the body, like an automobile, performs best when fuel levels are optimal. High circulating blood glucose, as occurs in insulin resistance, metabolic syndrome or diabetes, impairs memory and learning. These effects are not just short term but can have permanent impact. The problem is made worse when diet patterns have the undesirable combination of too many high calorie foods that fail to deliver important nutrients and phytochemicals.[28]

Carbohydrates also are important for modulating mood and behavior, partly because they can modulate levels of brain serotonin, a brain neurotransmitter. The right level of serotonin is critical, so common drugs used to treat depression increase the length of time serotonin remains in nervous tissue. Since carbohydrate ingestion affects the crossing of the blood-brain barrier by tryptophan, serotonin’s precursor, it affects brain levels of serotonin. The right level of carbohydrate, promoted by the right level of fat, is important for regulating mood, promoting calmness and preventing adverse behaviors. [29-30]

Vitamins and Antioxidants in the Brain

Free radicals, resulting from stress, aging, sunlight, metabolism, or excessive calories found in indulgent foods that deliver few nutrients or phytochemicals but are packed with an excess of fat, sugar and low quality carbohydrate, impair tissue functioning throughout the body. Left unchecked, free-radical induced inflammation in nervous tissue can lead not only to dementia but also to Parkinson’s disease and the formation of amyloid plaques in the brain that lead to Alzheimer’s Disease. [33]

Anti-inflammatory and antioxidant vitamins and phytochemicals found in foods such as coffee, tea, berries and other fruits and vegetables as well as in nuts, legumes and whole grains scavenge and detoxify free radicals. Over 10 years of research show that antioxidant vitamins and phytochemicals have a profound impact on reducing oxidation in the brain and improving cognitive functioning, particularly in those over 55 years old. [33-36]

Summary

Brain health, like that of other organs requires a balance of dietary components. Diet patterns with this balance, such as USDA’s MyPlate or the DASH diet model, have demonstrated associations with lower risk of cognitive decline. Unfortunately, the typical Western diet with low intakes of fruits, vegetables, and whole grains along with overconsumption of saturated fats and calories and underconsumption of foods rich in fiber and vitamins, minerals and phytochemicals, is associated not only with obesity, diabetes and coronary heart disease but also a number of chronic conditions including impaired cognitive functioning later in life.

The net takeaway shows carbohydrate and nutrient-rich whole and refined foods do not cause problems if the diet contains each of the food groups in the right amounts. This enables all the dietary components to work together to reduce disease risk and minimize the risk of various types of cognitive decline. However, disordered diets too high in an unhealthy combination of calories, carbohydrates and saturated fats lead to impaired glucose tolerance, insulin resistance and other indicators of impairments of metabolism which are associated with higher risks of cognitive decline.

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References:


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Other “Food for Progress” agreements included a grant to Catholic Relief Services to improve the lives of 5,000 villagers in Niger. The sale of 60,000 metric tons of U.S. wheat helped complete construction of One World University and purchase equipment in Changa- galane, Mozambique.

The U.S. wheat industry participates an- nually in the International Food Aid and Development Conference. Last year, wheat representatives emphasized the valuable role wheat plays in food aid programs. They provided resources for private voluntary organizations and governments to help implement food aid and development proj- ects. This idea exchange between U.S. wheat and those on the front lines of the battle against hun- ger in places like Africa, Southeast Asia, and Latin America resulted in enduring relationships vital to achieving the goal of food for all.

In April, an American ship transported over 25,000 metric tons of U.S. wheat to help Syrian war victims feed their families suffering from severe shortages of bread and other important food staples.

The U.S. wheat industry remains committed to elimi- nating hunger and supporting food security pro- grams. Already this year, nearly 270,000 metric tons of U.S. wheat was delivered to countries around the world to meet food assistance and other program needs. In 2012, wheat farmers across America pro- duced 44.2 percent of all U.S. food donations sent to 14 countries, including Ethiopia and Bangladesh. The U.S. is the largest single wheat donor to the UN World Food Programme.

U.S. wheat has long been the leading commodity used in U.S. wheat aid programs. American wheat farmers play an integral role in feeding hungry people in the world. Wheat supplies 20 percent of the world’s calories, and every year the United States donates almost 1 million metric tons of wheat for emergency and non-emergency international food aid and development programs.

American wheat provided from all regions of the U.S. feeds people enduring severe food shortages inter- nationally. Donated U.S. wheat is also used for long- term project development by selling it in the recipient country, a process called monetization. Proceeds from these sales are used for agriculture develop- ment programs, education, farming assistance, and business development.

The U.S. Wheat Feeds the Hungry

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