Dole Nutrition Institute

Nutrition News

Feeding the world with knowledge

March 2013

Dole Diet Center

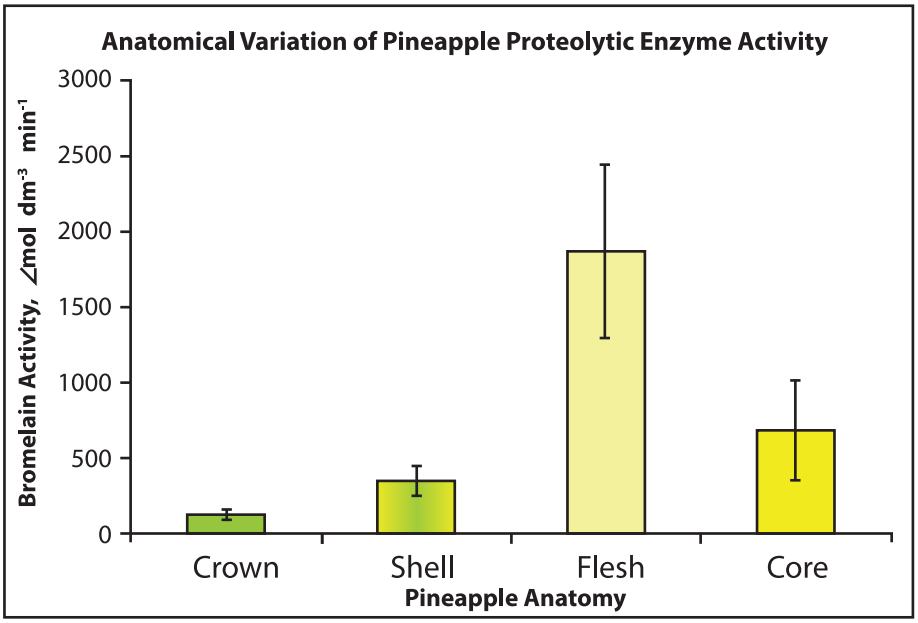
Pineapple Power

Exploring Enigmatic Enzymes

Conventional wisdom has long maintained that fruit enzymes – like the bromelain in pineapple – do not survive the journey through the digestive tract due to gastric acidity. In other words, all of us enjoying fresh pineapple to aid digestion after a meal may be nibbling on wishful thinking. But recent research proves the power – and perseverance – of bromelain, at least in mice.

Duke scientists found that the enzyme makes it to the colon intact, free to bestow anti-inflammatory benefits that may play a role in preventing ulcerative colitis. Emerging research continues to build the case that bromelain – and other fruit enzymes (kiwi's actinidin and papaya's papain) may potentially have human health benefits as well.

Dole scientists have now shown that the activities of these enzymes vary as a function of plants' anatomy. For example, the chart below indicates that for pineapple the highest activity is in the flesh, less so in the peel and stems (good news for consumers as that is the part we eat). Papaya, by contrast shows the most activity in the peel, less so in the flesh. Why do different tropical plants distribute their enzymes so differently? More research is needed to know for sure, but for now Dole will continue to collaborate with universities located on the NCRC campus to explore how these enzymes are produced, and potential benefits for human health.



Hot News

GOT COLD SYMPTOMS?

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Weight Loss Comes to Those Who Wait

Celebrate National Procrastination Week by Postponing Sweets

March 3rd through 9th marks National Procrastination Week, and while generally we don't encourage putting off till later what can be accomplished in the now, the principle might actually work when it comes to weight management. That's right folks: Saying "later" to your cravings makes the need to feed fade, so that you're less likely to binge if you bump the impulse back a bit.

Such were the findings of Nicole Mead, Ph.D., of Erasmus University, and colleagues from the University of Houston – findings so fresh that they're pending publication (or are those journals procrastinating?). Nearly 100 under-graduate student study volunteers were invited to watch film previews. Students were divided into three groups – each had a bowl of candy-covered chocolates in front of them – but Group One was told to "postpone," Group Two was encouraged to "snack in moderation" and Group Three were invited to have at it! Results? Those who "postponed" ate 70% less than the "indulge" group, and, most interestingly, 58% less than the "restraint" group. Not only that, in the week following, the procrastinators consumed less chocolate than indulgers and restrainers. The researchers' conclusion: Simply "putting it off" might be a more effective diet strategy than trying to exercise self-control in the moment.

While self-control is a muscle – that can be built up, like any other, due to frequent exercise – there are certain helpful "tricks." One is switching to your non-dominant hand – which not only helps you eat less, it helps with moderating aggressive impulses. You might try clenching that hand – or other muscle – as tensing muscles was found to increase willpower by 140%. Another "gee whiz" tip: using a larger fork (smaller forks make you eat faster), or employing chopsticks. While thwarting weight gain might seem like a motivation more for adults, try turning these into games with your kids, particularly when it comes to sweets, as disturbing research associates early daily candy indulgence with higher incidence of violent behavior later in life.

Dole Nutrition Research Laboratory

Seen Through the Eyes of Nutrition Crusader

March is National Nutrition Month, and what better way to raise awareness than an interview with Elizabeth Pivonka, Ph.D., RD, and President of the Produce for Better Health Foundation (PBH) upon her tour of the Dole Nutrition Research Laboratory at the North Carolina Research Campus where eight universities have joined forces to study fruit and vegetables alongside Dole researchers.

Dr. Pivonka, who's been recognized as one of the "Top Women in Grocery" among her many other honors, gives us her impressions of efforts to expand knowledge of fruits and vegetables in this unique research environment.

DNI: You recently came to visit the Dole Labs at the North Carolina Research Campus – tell us generally what you saw? What surprised you? What impressed you?

EP: The campus was just incredible – it's a location that was developed solely to focus on plants and health. What impressed me most was the untapped opportunity for fruit and vegetable research. The place was equipped with some of the best analytical technologies, which aren't available just anywhere, including a relationship with a stellar group of universities. There also seemed to be a great deal of flexibility in how companies can work with the research campus.

DNI: What are the greatest hindrances to educating the consumer about the benefits of a diet rich in fruits and vegetables?

EP: Short of switching advertising dollars from unhealthy foods to fruit/vegetables, reducing subsidies of less healthy foods, and making sure fruit and vegetables are readily accessible wherever people eat (on restaurant menus and in schools), it would be helpful to be able to talk more specifically about what fruits and vegetable can do for you. Most consumers know that fruits and vegetables are good for them; many, however, don't know just HOW good they are. We've seen how consumption of various commodities increases in other countries when specific

health benefits are promoted. Whether this increases overall fruit and vegetable consumption and displaces other less nutritious foods, rather than simply switching between different fruits and vegetables, remains to be seen.

DNI: What impressed you about the Dole's approach to consumer education?
EP: Dole's willingness to spend resources on conducting research, getting it peer reviewed, and THEN promoting the results is both responsible and commendable.

DNI: Should more food companies be doing actual nutrition research as opposed to marketing boards or universities?
EP: This campus provides an opportunity for food companies, marketing boards, AND universities to do nutrition research. For smaller companies, working through their marketing and promotion board is certainly the best way to conduct research. Those marketing boards can work with universities who have a presence on the North Carolina Research Campus.

For larger companies who are interested in nutrition research, this is just about the ONLY place that is equipped in such a way that allows them to do it themselves without having to pay high start-up overhead of their own. Ultimately, if you want to understand more about the benefits of your individual fruit or vegetable, you'll have to help drive the research to be sure it's done in a way that makes the most practical business sense.

DNI: What is PBH doing to increase fruit and vegetable consumption?
EP: We provide a reminder to consumers to do what they already know they should be doing: eating more fruits and veggies. We do this by encouraging the use of the Fruits & Veggies—More Matters message on packaging, at point of sale, on our FruitsAndVeggiesMoreMatters.org website, through health professionals, and through several social media channels. We offer 'how to' tips in addition to 'why' they should eat more.

- Follow us on Twitter & retweet @Fruits_Veggies
  - We have Monthly Twitter Parties, 1st Wed, 4:00 pm EST
- Use tools/information at:
  - PBHFoundation.org (for health professionals)
  - PBHCatalog.org (for educators)
  - FruitsAndVeggiesMoreMatters.org (adults)
  - FoodChamps.org (children)
  - Pinterest: fvmorematters
  - Newsletter: Text FRUITSVEGGIES to 22828
  - Search for us on facebook: https://www.facebook.com/pages/Fruits-Veggies More-Matters/103391981984?sk=app_225131720862670

DNI: What should retailers do more of?
EP: Retailers can only benefit by promoting fruits and vegetables more, including fresh, canned, frozen, dried and 100% juice!

Nutrition News Desk

Got Cold Symptoms?

Fruit, Fitness, Best Allies to Lower Risk

While we're past the peak of cold season (February) we're still in the thick of the period of higher sickness rates which begin in October and stretches through May. Moreover, no one can deny that the current cold season has been one of the nastiest. Not only has the predominant bug been one of the most virulent, this latest season started earlier than usual, giving it more time to increase its infective scope. It's time to start thinking about what lifestyle changes you can make to improve your immunity in the coming year. Chief allies in the battle lines against infection: fitness and fruit.

David Nieman, PhD – one of the superstars of the North Carolina Research Campus, home to Dole's Nutrition Research Laboratory – looked at the dietary and lifestyle habits of 1,002 people (age 18 to 85, of both genders) during a twelve week period during the cold season while monitoring symptoms of Upper Respiratory Tract Infection.

The major finding: 43% fewer days of symptoms (4.4 vs. 8.2 days) among fit individuals (i.e., 5 days or more of activity) plus 32% less severity of symptoms. Another finding was 27% fewer days of sickness (4.7 vs. 6.5 days) among those who ate more than 3 servings of fruit per day. Taking all factors into account, the most vulnerable lifestyle typology was young, unfit, highly educated, divorced female who doesn't eat any fruit at all. If some of that sounds like you, jump on factors within your immediate control by finding more time to exercise and prioritizing fruit! Bananas, pineapple, kiwis, papaya, mango – tropical fruit in general tends to supply good quantities of immune-supporting vitamin C.

What else can you do to arm yourself against illness?

- **Get zinc** – not from supplements – but from healthy sources like crab, oysters, turkey, beans, and oats.
- **Take time for tea:** Harvard researchers found tea drinkers enjoyed significantly higher anti-viral interferon in their bloodstream.
- **Go Brazilian:** One Brazil nut supplies 160% of the RDA for selenium which supports synthesis of proteins that suppress flu viruses.

Learn more by watching our interview with study author, Dr. David Nieman.

Fiber Defense

Broccoli, Plantain Fiber May Help with Crohn's, Basic Study Finds

Crohn's disease is one of the most common inflammatory bowel diseases (IBD) affecting 1.4 million patients in the U.S. with an overall health care cost of more than $1.7 billion, With Crohn's disease, the immune system mistakes food for invasive agents and attacks the cells lining the gastro-intestinal wall, leading to chronic inflammation. There is no medical cure at present, thus, the condition commonly requires a lifetime of care with 75% of sufferers ultimately requiring some form of surgery. Fortunately, new research now suggests Mother Nature might offer someday relief in the form of broccoli and banana/plantain fiber.

In a study published in the journal, *Gut*, British and Swedish researchers collaborated on a lab investigation into the effectiveness of apple, leek, broccoli and banana/plantain fibers in protecting cells from dangerous bacteria. The results: The broccoli and banana/plantain fiber protected cells from the E Coli bacteria by as much as 45% to 83%. Apple and leek fiber had no significant effect. Why might this be? Compared to apples and leeks, broccoli and bananas/plantains may have higher soluble fiber contents (which absorbs water and thickens the stool, slowing digestion). Dole scientist Dr. Nick Gillitt hypothesizes that this thickening might limit the harmful bacteria's access to vulnerable intestinal cells. By contrast, a food processing emulsifier used in most ice cream dramatically increased E Coli invasion by as much as 530%.

These results back up previous research which has consistently shown the GI protective potential of fiber. People with the highest fiber intake enjoy a 42% lower risk of diverticulitis – a painful inflammation disorder impacting the large intestine. Banana fiber, in particular, has been linked to 72% lower risk of colorectal cancer. Broccoli – among other cruciferous veggies like cauliflower, Brussels sprouts and cabbage – contains compounds besides fiber that may disrupt colon cancer cell division.

By the way, not only does ice cream contain emulsifiers that could put Crohn's sufferers at risk, it's also the top source of palmitic acid, which interferes with the brain's response to leptin – effectively lowering both ability to receive satiety signals as well as burn calories.

Be Kind to Your Kidneys

Stomach Tumors 74% Larger Among Obese Subjects

March is National Kidney Month, and a good time to give the oft-ignored organ its due. Unlike attention-grabbing vitals — heart, lungs, liver — kidneys take a back seat, both in terms of public awareness and actual location in the body (the two bean-shaped, fist-sized organs reside in your middle-back, just below the rib cage). But despite this relative intestinal obscurity, robust kidney function could not be more integral to your health. Kidneys keep your blood clean, filtering out waste that then gets secreted as urine. In addition to taking out the trash, your kidneys release hormones that stimulate red blood cell formation, regulate blood pressure and help maintain calcium for the bones. Threats to kidney health fall into three categories: kidney disease, kidney cancer and kidney stones.

Kidney Disease

Kidney disease essentially constitutes the severe impairment of kidney function resulting from damaged nephrons (the million filtering capillaries that make up each kidney). Kidney disease is sometimes called a "silent killer" because its progression is so gradual, and its symptoms barely detectable, until nearly all kidney function is gone. "People find themselves in the emergency room, on dialysis, before they even know they have a problem," said Dr. Lea, Atlanta kidney specialist. "That's why it is so important to control diabetes and high blood pressure and have your blood and urine regularly tested for kidney disease, once you know you are at risk."

Other conditions can increase risk: Diabetes is the leading cause of chronic kidney failure in the U.S., accounting for 40% of new cases, with high blood pressure accounting for another 30%. Untreated urinary tract infections also pose a threat.

Kidney Cancer

While 36,000 people develop kidney cancer each year, the good news is that if diagnosed and treated early enough, prospects for full recovery from renal cell carcinoma are good. Even better, changes in lifestyle and diet can lower your kidney cancer risk.

Go bananas: Researchers at the Karolinska Institute in Sweden analyzed the dietary information from 61,000 middle-aged women over a 13-year period and found that those who ate bananas four to six times a week were 50% less likely to develop kidney cancer. Beet and carrot consumption was associated with a 50% to 65% decrease in risk, while eating salads (once or more daily) was linked to a 40% drop in risk.

Kick butt: Cigarette smoking doubles your risk of developing kidney cancer. Obesity and high blood pressure are also factors — as is gender, with men almost twice as vulnerable to kidney cancer as women. Both sexes can lower cancer risk through a diet rich in fruits and vegetables.

Kidney Stones

Afflicting one in ten men, and one in twenty women, kidney stones are compact accumulations of minerals (calcium is the most common) passing through the kidneys. Small stones may pass through the system without too much discomfort, while larger ones can cause considerable pain and lead to medical complications. Here's what you can do to lower your risk:

Lose weight: According to a Harvard Medical School study published in the Journal of the American Medical Association, the obese are significantly predisposed to developing kidney stones. After adjusting for other risk factors, men weighing more than 220 lbs had a 44% increased risk compared to men weighing less than 150 lbs. Obese, older women had an 89% increased risk, while obese younger women had a 92% increased risk.

Drink water: Fluids flush away substances that form stones in the kidneys. Limit coffee and cola, which have a diuretic effect.

Eat vegetables: Most vegetables are alkaline and thus help neutralize stone-forming acids in the body.

Eat calcium-rich foods: Conventional wisdom has advised against calcium because it is found in many stones. Harvard Medical School researchers found that women with the

highest calcium intake had a 27% lower risk of kidney stones compared with their calcium-averse peers. Interestingly, supplemental calcium intake was not associated with reduced risk of stone formation. Some of the best sources of calcium include nonfat dairy, soybeans, navy beans, kale, canned salmon, arugula and beet greens.
Limit meat: Excessive protein intake can prompt over-production of uric acid that may lead to kidney stones and gout.

Featured Recipe

Stuffed Cabbage Rolls

Ingredients

1	large head green cabbage (about 5 pounds)
1 1/4	pounds 93% lean ground turkey
1	large DOLE® Onion, chopped
1	cup instant brown rice
1	teaspoon salt
1/4	teaspoon ground black pepper
1	can (28 ounces) crushed tomatoes
2	tablespoons cider vinegar
1/2	teaspoon ground allspice
1/2	cup DOLE Seedless Raisins

Serves: 8
Cooking Time: 6 hours
Preparation Time: 30 minutes

Directions

- Cut the stem and heart from the cabbage and place cut-side down in a large microwavable bowl. Pour 1 cup of water over the cabbage. Microwave the cabbage on high for 2 minutes. Carefully lift cabbage from the bowl and remove a few of the outermost leaves. Microwave the head again and repeat until 8 large leaves are removed. Reserve the remaining cabbage for another use.
- Meanwhile, combine the turkey, half the onion, rice, salt and pepper in another large bowl. Mix with your hands to ensure the ingredients are thoroughly incorporated. Divide the mixture into 8 balls.
- Place a cabbage leaf on a flat work surface. Trim the thick center vein of the leaf so that the leaf is easier to roll. Place a ball of the turkey mixture at the bottom of the leaf and fold the sides over. Roll up, burrito-style, and repeat with remaining leaves.
- Arrange cabbage rolls, seam-side down, in a 5-quart slow cooker. Combine remaining onion, tomatoes, vinegar, allspice and raisins in a bowl and pour over the rolls. Cover and cook for 6 hours on high setting until cabbage is tender.

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