I am pleased to introduce Issue 8 of the Nutrition Research Update. This edition explores a variety of timely topics in nutrition including an upcoming symposium on dietary approaches to reduce the risk of type 2 diabetes, recent European dietary protein recommendations for older adults, and new research on the benefits of breakfast.

As the new Senior Director of Nutrition Research and Communications at the Egg Nutrition Center, one of my objectives is to disseminate credible scientific information on nutrition and health. In that vein, we aim to feature new and exciting research findings in the Nutrition Research Update on topics relevant to optimal health and disease prevention. If you have any suggestions for the content or questions about the studies or concepts presented, please don’t hesitate to contact us at info@eggnutrition.org.

Regards,

Tia Rains, PhD
Senior Director of Nutrition Research and Communications
Egg Nutrition Center

ENC Research Program
ENC administers an annual research program with approximately $2 million dollars provided by the American Egg Board and the American Egg Board. Grant submissions are due January 5, 2014. Please visit our website for additional information.

Social Feature
ASN Satellite Symposium to Advance the Understanding of Dietary Approaches to Reduce Risk of Type 2 Diabetes Mellitus

The prevalence of diabetes is rapidly increasing, affecting 8.3% or 25.8 million Americans (1). As such, recommended intakes are similar in adults of all ages.

Dietary Protein

Revisiting Dietary Protein Recommendations in Older Adults: Moving Past Nitrogen Balance Studies

Historically, dietary protein recommendations have been based on the essentiality of amino acids to serve as building blocks for structural proteins, as well as precursors for numerous enzymes, hormones, neurotransmitters, membrane transporters, and other important molecules (2). As such, recommended intakes are similar in adults of all ages.

Breakfast Research

Recent Developments in Research on Breakfast Consumption

Scientific evidence continues to accumulate on the importance of breakfast. A recent prospective study from researchers at the Harvard School of Public Health tracked the relationships between eating habits, including eating breakfast, and incident coronary heart disease (CHD) in a cohort of 26,901 males. Over 16 years of follow up, results showed that skipping breakfast...

Read full article.

What We’re Reading


- "Influence of vitamin D status on respiratory infection incidence and immune function during 4 months of winter adults and new research on the benefits of breakfast.


- "Directions: Fatty acids and intakes are inversely related to dietary symptoms among young white women" Beydoun et al. Am J Clin Nutr. 2013; E-pub ahead of print

To learn more about egg nutrition, the latest research and to download patient education materials, please visit the Egg Nutrition Center at www.eggnutritioncenter.org.
The prevalence of diabetes is rapidly increasing, affecting 8.3% or 25.8 million Americans (1). Even more alarming, an estimated 79 million Americans have prediabetes, a condition characterized by the presence of either impaired glucose tolerance or impaired fasting glucose. Individuals with prediabetes have a significantly higher risk for developing type 2 diabetes, as the insulin resistance associated with impaired glucose homeostasis ultimately leads to a decrease in insulin secretion from pancreatic beta-cells. The presence of prediabetes is also positively associated with other conditions, such as heart disease and stroke (2).

Diet and lifestyle intervention studies have shown that weight loss can considerably reduce or delay the progression of prediabetes to type 2 diabetes. For example, the Diabetes Prevention Program showed that a weight loss and physical activity program reduced the development of type 2 diabetes by 58% during a 3-year period (3). However, there is a limited understanding of the dietary factors beyond weight loss that may influence the development of type 2 diabetes. For example, is there an optimal dietary pattern that reduces the development of type 2 diabetes, other than through promotion of weight loss/maintenance or other mechanisms?

The role of dietary protein, in particular, is not well understood with respect to diabetes risk. Further, the paucity of scientific evidence is conflicting. Studies have shown that higher protein diets promote greater and more rapid weight loss and more favorably affect diabetes risk factors than higher carbohydrate diets (4). Further, feeding studies have shown that protein-rich meals and diets reduce postprandial glucose and insulin responses (5). However, increased amino acid concentrations have been shown in some studies to induce insulin resistance in skeletal muscle (6). One observational study showed that chronic high dietary protein intakes were associated with increased incidence of type 2 diabetes (7). Additionally, it is unknown to what extent dietary protein specifically affects different outcomes, since increasing protein content of a meal or diet displaces carbohydrate, fat, or both.

To advance the understanding of these topics, ENC is convening a group of internationally-recognized experts for a Satellite Symposium, in conjunction with the American Society for Nutrition’s Advances & Controversies in Clinical Nutrition meeting on Thursday, December 5th in Washington, D.C.

"The Controversial Role of Dietary Protein in Diabetes and Related Disorders" will bring together four distinguished speakers to address different aspects of dietary protein's role in type 2 diabetes:

Kevin Maki, PhD, Midwest Center for Metabolic and Cardiovascular Health, "Pathophysiology of Type 2 Diabetes Mellitus and Metabolic Implications of Diet"

Theresa Nicklas, DrPh, Baylor College of Medicine, "Relationships between Eating Patterns, Adiposity, and Cardiovascular Risk Factors"

Barbara Gower, PhD, University of Alabama, "Macronutrients and Metabolic Health"

Amy Campbell, MS, RD, LDN, CDE, Joslin Diabetes Center, "Dietary Protein in the Practical Management of Prediabetes and Diabetes"

Please mark your calendars for this thought-provoking symposium.

References:


DIETARY PROTEIN

Revisiting Dietary Protein Recommendations in Older Adults: Moving Past Nitrogen Balance Studies

Historically, dietary protein recommendations have been based on the essentiality of amino acids to serve as building blocks for structural proteins, as well as precursors for numerous enzymes, hormones, neurotransmitters, membrane transporters, and other important molecules (1). As such, recommended intakes are similar in adults of all ages, 0.8 g of high-quality protein per kilogram body weight (kg BW) per day (d). This equates to approximately 50 g per day or 10-12% of daily energy intake for most adults, a level almost all Americans achieve.

However, there is a growing body of evidence that higher protein intakes may be optimal for health, particularly for certain age groups, persons at risk for nutrition-related chronic diseases, as well as for individuals with a high level of physical activity. Such findings have not been taken into account in determining protein needs, a process based almost exclusively on maintaining nitrogen balance. For example, there are numerous studies that have shown greater weight loss as well as more favorable changes in body composition and chronic disease risk markers in adults consuming 1.5-2 times the recommended level of protein compared to current recommendations (2, 3). Recently, higher intakes of protein (23-28% of energy) have also been shown to improve cardiovascular risk markers in children (age 5-18 years) participating in the Diogenes Study, a pan-European randomized trial evaluating dietary protein and glycemic index (4).

Older adults, in particular, may have far greater protein needs than previously thought due to age-related changes in body composition, most notably, loss of lean body mass. This was recently addressed in a position paper prepared by the PROT-AGE Study Group, an international panel of experts appointed by the European Union Geriatric Medicine Society and endorsed by several other international scientific organizations (5). Based on the panel’s review of the recent scientific evidence, optimal protein intakes for older adults (defined as age >65 years) are 1.0-1.2 g per kg BW per d for healthy persons and up to 1.2-1.5 g per kg BW per d in those with acute or chronic disease, with the exception of those with severe kidney disease not on dialysis (who should limit protein intake). Such intakes are associated with improved bone health, cardiovascular function, wound healing, recovery from illness and overall functionality. The benefits of dietary protein, particularly with respect to maintaining and building lean mass, can be further potentiated by consuming 25-30 g of protein per meal as well as incorporating endurance and resistance exercise, where possible. While the panel acknowledges the need for additional research, these guidelines are a pivotal step in improving the overall health of older adults and creating a framework for determining protein needs for all age groups beyond merely nitrogen balance.

Sources:

Next Article >> New Breakfast Research

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Recent Developments in Research on Breakfast Consumption

Scientific evidence continues to accumulate on the importance of breakfast. A recent prospective study from the researchers at the Harvard School of Public Health looked at the relationship between eating habits, including eating breakfast, and incident coronary heart disease (CHD) in a cohort of 26,901 males. Over 14 years of follow-up, results showed that skipping breakfast was associated with a 27% greater risk of CHD compared to not skipping breakfast. An additional study, of 2,148 European adolescents (12-18 yr) showed that breakfast consumption was positively associated with cardiorespiratory fitness, but not overall activity, muscular fitness, or speed/ agility. And lastly, a cross-sectional study of 5,625 Iranian students (10-18 yr) showed that students consumed as seldom breakfast eaters (29.0%) were at greater risk for metabolic syndrome and related factors (insulin resistance, LDL-cholesterol) compared to those who ate breakfast regularly (47.3%) or often (23.7%).

Also published in the last few months, a meta-analysis in the American Journal of Clinical Nutrition (AJCN) (2). However, the primary objectives of the meta-analysis were to evaluate biased research reporting and over-replicating research, two factors that contribute to scientific conclusions that are not necessarily accurate. The researchers conducted an in-depth analysis of the available research (92 unique articles) on breakfast consumption and body weight and rated the accuracy with which investigators represented their own work as well as how subsequent studies reported prior research results. For example, the authors explored examples of cases where data were misrepresented by investigators, often being referred to as causal when the research was observational in nature.

The headlines focused on one component of the analysis, the apparent lack of randomized control trial (RCT) evidence measuring the effects of breakfast consumption on body weight. In fact, at the time of their analysis, they identified only one study long enough in duration to evaluate the influence of breakfast skipping on weight loss. Results of that study showed that habitual breakfast skippers who switched to eating breakfast lost more weight than those continuing to skip breakfast. However, habitual breakfast eaters that switched to no breakfast lost more weight than those continuing to eat breakfast, resulting in the conclusion that “those who had to make the most substantial changes in eating habits to comply with the program achieved better results.” What was alarming also of interest to the researchers of the aforementioned AJCN paper was not so much the lack of RCTs on the topic, but that 62% of the articles they identified incorrectly reported the results of this RCT, suggesting that eating breakfast led to greater weight loss.

While the information presented in this article is intriguing, we suggest that it raises more interesting discussion points about scientific analysis overall than breakfast itself. There is, in fact, ample observational evidence demonstrating that skipping breakfast is associated with obesity. Not only are the health outcomes influenced by an unfavorable diet consumption to hunger management and body weight, two benefits of breakfast that are generally touted by health professionals (3). However, the primary objectives of the meta-analysis were to evaluate biased research reporting and over-replicating research, two factors that contribute to scientific conclusions that are not necessarily accurate. The researchers conducted an in-depth analysis of the available research (92 unique articles) on breakfast consumption and body weight and rated the accuracy with which investigators represented their own work as well as how subsequent studies reported prior research results. For example, the authors explored examples of cases where data were misrepresented by investigators, often being referred to as causal when the research was observational in nature.

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The 2010 Dietary Guidelines Advisory Committee raised a number of interesting questions about breakfast during their deliberations and the 2010 Dietary Guidelines for Americans recommend eating a nutrient- dense breakfast due to evidence linking breakfast consumption to weight loss, weight maintenance and improved nutrient intake. The 2010 Dietary Guidelines Advisory Committee raised a number of interesting questions about breakfast during their deliberations and the 2010 Dietary Guidelines for Americans recommend eating a nutrient- dense breakfast due to evidence linking breakfast consumption to weight loss, weight maintenance and improved nutrient intake. The health implications of breakfast consumption will certainly remain a topic of interest in the scientific community!

Sources:

Next Article >> What We’re Reading

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**Research We’re Reading**

- "Egg consumption and coronary atherosclerotic burden"
  Chagas et al. *Atherosclerosis*. 2013;229:381-384

- "Relationships between sarcopenic obesity and insulin resistance, inflammation, and vitamin D status: the Korean Sarcopenic Obesity Study”

- "Influence of vitamin D status on respiratory infection incidence and immune function during 4 months of winter training in endurance sport athletes”

- “Omega-3 fatty acid intakes are inversely related to elevated depressive symptoms among United States women”

- "High-density lipoprotein cholesterol, coronary artery disease, and cardiovascular mortality”
  Silbernagel et al. *Eur Heart J*. 2013; E-pub ahead of print

- "Insufficient amounts and inadequate distribution of dietary protein intake in apparently healthy older adults in a developing country: implications for dietary strategies to prevent sarcopenia”

- "Effects of high-protein diets on fat-free mass and muscle protein synthesis following weight loss: a randomized controlled trial”

- "Association between fruits and vegetables intake and frequency of breakfast and snacks consumption: a cross-sectional study”

Next Article >> Research Program
ENC Research Program
ENC administers an annual research program with approximately $2 million dollars provided by America’s egg farmers through the USDA and the American Egg Board. Grant submissions are due January 1, 2014. Please visit our website for additional information.

CONGRATULATIONS
2013 Egg Nutrition Center Research Grant and Dissertation Fellowship Recipients

Research Grants
Wayne Campbell, PhD, Purdue University
"Effects of egg consumption on carcass and organ yields from corn-soybean-based and corn-soy-based diets"  
Muric Candill, PhD, RD, Cornell University
"Improving cholesterol, HDL, and atherogenicity in rats fed corn-soy-based diets after an 8 week period of consumption"  
Victor Fulgoni, PhD, Nutrition Impact, LLC.
"Differences in functional approaches to measure the effects of egg consumption on health-related outcomes"  
David Katz, MD, MPH, FACP, FACPM, FAC, Yale University
"Effect of egg consumption on type 2 diabetes patients: Effects on glycemic control, anthropometry, diet quality and cardiovascular status"  
Dingbo Liu, PhD, Oklahoma State University
"Effect of egg consumption on the metabolism of dietary lipids"  
Oxiana Ziouzenkova, PhD, The Ohio State University
"Identification of anti-inflammatory properties of eggs in adipose tissue"  
Keri Boutelle, PhD, University of California, San Diego
"A pilot study examining the impact of eggs for breakfast on weight loss and hunger in obese children"  
Wayne Campbell, PhD, Purdue University
"Effect of dietary protein intake on weight loss and resistance training-induced changes in body composition, muscle mass, and indices of metabolic syndrome"

Dissertation Fellowship
Sze Ting (Cecilia) Kwan, Cornell University
"Choice as a moderator of perinatal function for improving fetal development"

For more information regarding the Egg Nutrition Center Research Grant Program, contact the Egg Nutrition Center at research@eggnutritioncenter.org

Look for ENC at these upcoming events:
- American Association of Family & Consumer Sciences (AAFCS) Webinar
  - November 21, 2013
  - Dietary Approaches to Diabetes: Resources from the Joslin Diabetes Center
- Advances & Controversies in Clinical Nutrition
  - December 5-7, 2013
  - Symposium
  - December 5, 2013
  - 1:30 – 4:30pm ET
  - The Controversial Role of Dietary Protein in Diabetes and Related Disorders

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