

## Diet Corner

### Second meal effect

The second meal effect (SME) is a phenomenon where the glycemic index (GI) of one meal has an influence on the glycemic response to a subsequent meal. For instance, a low GI-high protein breakfast has been shown to lower the post-prandial glucose response (PPGR) to lunch. Fibre and resistant starch in food helps reduce the PPGR to a meal through delayed gastric emptying caused by short chain fatty acids or by reducing the amount of glucose that is absorbed in the intestine. The SME is also associated with priming of muscle glycogen synthesis, secretion of hormones involved in maintaining euglycemia and increasing satiety.

#### **References:**

1. Fletcher, J. (2012). The Second Meal Effect and Its Influence on Glycemia. *Journal of Nutritional Disorders & Therapy*.
2. Park, Y. M., Heden, T. D., Liu, Y., Nyhoff, L. M., Thyfault, J. P., Leidy, H. J., & Kanaley, J. A. (2015). A high-protein breakfast induces greater insulin and glucose-dependent insulinotropic peptide responses to a subsequent lunch meal in individuals with type 2 diabetes. *The Journal of nutrition*.

### Lente carbohydrates: A different approach to Diabetes management?

Lente carbohydrate foods (also known as acarbose) act by modifying gastrointestinal events to reduce the rate of release of carbohydrate and the subsequent rise in blood glucose. They are defined as foods that are high in viscous fibre, or foods that are resistant to gelatinization and show slower rates of digestion and absorption and thus may be favoured in reducing post prandial glycaemic levels and insulinemia. Specific enzyme inhibitors may also cause lente effects. Certain small-intestinal effects of lente carbohydrate may be mimicked by altering feeding frequency – eating small frequent meals, chewing slowly etc. In time, a diet rich in lente carbs can also aid in decreasing blood lipid and urea levels.

#### **References:**

1. Jenkins, D. J. A. (1982). Lente Carbohydrate: A Newer Approach to the Dietary Management of Diabetes. *Diabetes Care*, 5(6), 634–641. doi:10.2337/diacare.5.6.634
2. Jenkins, D. J. A., Jenkins, A. L., Wolever, T. M. S., Vuksan, V., Rao, A. V., Thompson, L. U., & Josse, R. G. (1994). Low glycemic index: lente carbohydrates and physiological effects of altered food frequency. *The American Journal of Clinical Nutrition*, 59(3), 706S–709S. doi:10.1093/ajcn/59.3.706s



## *The Medical* **Bulletin**

### **RESISTANT STARCH**

Resistant Starch(RS) refers to the portion of starch and starch products that resists digestion as it passes through the gastrointestinal tract, fermented in the colon by colonic microflora and produces SCFA which directly or indirectly improves satiety, PPGR, lowers TGL & total Cholesterol. RS as a prebiotic can promote the growth of beneficial microorganisms such as Bifidobacterium which exert a lot of beneficial side effects on the human body.

### **CLASSIFICATION OF RS:**

- RS 1 is physically inaccessible to digestive enzymes.
- RS 2 resists digestion because of the granule's nature.
- RS 3 is produced in the cooking-cooling process.
  1. Cooked and cooled rice increases RS by 2.5 times.
- RS 4 is a chemically modified starch found in a wide range of products.

### ***Reference:***

1. Madhuri R. Nigudkar, Current Res. Nutrition and food science journal, Vol 2 (2014)
2. Kendall CW, Emam A, Augustin LS, Jenkins Dj. Resistant starches and health (2004)
3. Liu H, Zhang M, Ma Q, Tian B, Health beneficial effects of resistant starch and on diabetes and obesity via regulation of gut microbiota. A review food function (2020)

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