



Roles of folate in manipulating cancer

Cancers are caused by mutations in DNA or by the expression of genes prone to mutation. If we can understand the cancer process, we can manipulate the factors and to reduce cancer occurrence.

Protective mechanisms of folate in carcinogenesis

Folate is a B-group vitamin that functions as a coenzyme in the metabolism of DNA synthesis and cell replication. Folate protects against cancer formation either by repairing damaged DNA or suppressing the expression of cancer genes (epigenetics).

Emerging studies show that folate can reduce the risk of cancer, but not all of these results have reached statistical significance. Inadequate intake of folate causes DNA hypomethylation, increases chromosomal fragility and diminishes DNA repair capacity, all of which contribute to the cancer process¹. Researchers continue to explore the area of epigenetics – looking at how lifestyle changes (particularly nutritional factors, such as adequate folate intake) can modify gene expression to reduce cancer risk. The WCRF global network Research Grant Programme funds a number of research projects in this field and the evidence is evolving.

The WCRF/AICR Second Expert Report, *Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective* (2007) reviewed over 30 studies in the area of folate and cancer. It concluded that foods containing folate could probably protect against pancreatic cancer, oesophageal cancer and colorectal cancer.

Different forms of dietary folate and their efficacy

Folate exists naturally in vegetables, fruits and liver. Another form of folate is folic acid that appears in fortified foods or supplements. Bioavailability of folate in foods is about 50% to 60%, whereas in folic acid-fortified foods, it goes up to about 85%, and with folic acid supplements can reach 100% bioavailability on an empty stomach². It is important to highlight the difference between natural folates in food and the synthetic form, folic acid, which is added to foods or in supplements.

Our Second Expert Report reviewed studies by stratifying according to the source of folate. Two studies on adequate natural folate showed a non-significant decrease in pancreatic cancer risk, while three studies on supplements showed a non-significant increased risk. The evidence appears to favour an intake of folate through natural foods.

Another recent study in the USA followed a cohort of 643 men for over a decade. The study found that men who took a folic acid supplement had twice the incidence of prostate cancer than those not taking the supplement, yet those who received adequate (but not in excess) amounts of folate from natural foods, had the lowest incidence³. The high bioavailability of folic acid supplements may result in over-consumption if added on top of a folate sufficient diet. “Not having enough folate can be bad, but having too much might do harm” was the take-home message by the authors of this study.

WCRF HK's Recommendation regarding folate supplements

With the understanding of folate and cancer still evolving, the Science Departments of the WCRF global network are continuously reviewing the evidence. More vigorous research needs to be done to answer questions like: Does everyone receive the same benefits? Which source is the best? Which levels are the most appropriate? What are the side effects of supplementation? Hence, at this stage, WCRF HK does not recommend the use of dietary supplements, including folic acid, for preventing cancer.

What about special circumstance like pregnancy?

A noteworthy point on folate is that all women of childbearing age intending to conceive a child should ensure an adequate intake of 600ug/day, before conception and up to the second trimester to prevent their babies from suffering neural tube defects². This intake requirement is higher than the 400ug/day for normal healthy individuals, as recommended in the Chinese Nutrient Reference Values⁴. This is an example of a situation when supplements are necessary.

Learn more at our Health Professional Conference

To know more about the latest findings on micronutrients and cancer, don't miss the unique opportunity to learn and interact with our Expert Panel member, Prof. Hilary J Powers, at our **Health Professional Conference 2009**. Please refer to the enclosed flyer for further details.

Reference:

1. World Cancer Research Fund / American Institute for Cancer Research. *Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective*. 2007 (www.dietandcancerreport.org)
2. Australian Government – National Health and Medical Research Council. *Nutrient Reference Values for Australia and New Zealand*. 2006
3. Jane C. Figueiredo et al. Folic Acid and Risk of Prostate Cancer: Results From a Randomized Clinical Trial. *Journal of the National Cancer Institute* 2009; 101(6):432-5
4. Food and Environmental Hygiene Department. *A closer look at Nutrition Label How to read Nutrition Label*. 2009.

Differences in the Effects of Beverages vs. Solid Food on Body Weight

A recent study that looked at the effect of reducing calories from either beverages or foods on weight change¹ has revealed surprising results. This prospective study from the US collected body anthropometry and 24-hour dietary recalls from 810 adults at 0 months, 6 months and 18 months. Liquid calories contributed to almost one-fifth (19%) of the daily caloric intake at baseline. After controlling for potential confounders, results showed that drinking 100 fewer calories led to losing more weight than consuming 100 fewer calories from solid foods (0.25kg vs. 0.06kg, $p=0.006$) at the 6 months point. When reducing the consumption by one serving (355mL) per day, only sugar-sweetened beverage demonstrated a statistically significant weight loss effect (-0.49kg, $p=0.006$ at 6 months; -0.65kg, $p=0.003$ at 18 months) amongst all the seven beverage categories.

The findings in this study support avoiding sugary drinks in order to combat obesity, which is a risk factor for many chronic diseases, including cancer². Fruit juice contains significant amounts of fructose and should be limited to one serving of 150ml unsweetened fruit juice a day. While individuals have the option to avoid sugary drinks, it is equally important for food industries to be aware of this public health issue, and turn to new product lines of “reduced sugar” or “no added sugar” drinks. More focus should also be put on “creating a supportive environment” than only “developing personal skills and knowledge” when it comes to tackling such a multi-factorial health issue, as suggested in the WCRF/ACIR Policy Report, *Policy and Action for Cancer Prevention*. WCRF HK invites you to share with us and other delegates how different sectors of the society can play a role in cancer prevention at the group discussion of our **Health Professional Conference** this year.

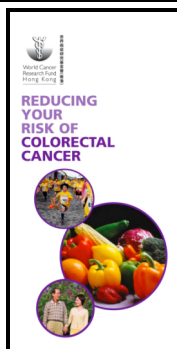
Reference:

- Chen L et al. Reduction in consumption of sugar-sweetened beverages is associated with weight loss: the PREMIER trial. *Am J Clin Nutr* 2009;89:1299-306.
- World Cancer Research Fund / American Institute for Cancer Research. *Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective*. 2007 (www.dietandcancerreport.org)

WCRF HK's New Leaflet “Reducing Your Risk of Colorectal Cancer”

This leaflet provides the most up-to-date advice on how to reduce the risk of the second most common, yet most preventable form of cancer – colorectal cancer.

To order a free copy, please contact us on 2529 5025 or email j.ho@wcrf.org



WCRF HK's Health Professional Conference 2009 Women's Cancers – New Horizons

10th October, 2009 (Saturday)

9.00 am – 5.00 pm

The Salisbury, YMCA of Hong Kong, Tsimshatsui

WCRF HK's Health Professional Conference 2009 will present the latest and most authoritative findings in the field of nutrition and cancer prevention. Invited experts will discuss the latest trends and statistics of lifestyle and cancer risk, together with the crucial role of nutrition in the development of various women's cancers. In addition, we shall explore the recently launched WCRF/AICR Policy Report, *Policy and Action for Cancer Prevention*, which spells out how cancer prevention recommendations can be translated into actions for all actor groups in the community, so that we can all join forces to combat the ever-rising, yet largely preventable cancer epidemic.

Invited international speakers include:

- ❖ Prof. Shiriki Kumanyika, School of Medicine, University of Pennsylvania, Philadelphia, PA, USA
- ❖ Prof. Hilary J Powers, Professor in Nutritional Biochemistry, Human Nutrition Unit, School of Medicine and Biomedical Sciences, University of Sheffield, UK

And local experts in the field of cancer...

Register Now! Seats are limited!

For details and registration, please refer to the enclosed registration form or call us on 2529 5025 or visit <http://en.wcrf-hk.org/audience/conference.php>

Check List

Please circulate this newsletter to other colleagues in order to help us spread the good news that cancer is largely preventable.

Informed is available free of charge to all healthcare professionals.

How to join the mailing list

If you would like to join the mailing list for *Informed*, please contact WCRF HK or email us at info-hk@wcrf.org

Newsletter copy review

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