

World
Cancer
Research Fund



American
Institute for
Cancer Research



**Food, Nutrition,
Physical Activity,
and the Prevention
of Cancer:**
a Global Perspective



Overall judgment

The Panel notes that previous reports have attributed roughly one third of the world's cancer burden to smoking and exposure to tobacco, and roughly another **one third to a combination of inappropriate food and nutrition, physical inactivity, and overweight and obesity.**



The process

Systematic literature reviews (-2005)

Rigorous criteria to assess evidence

Food-based approach

Physical activity

Body fatness

Panel judgements

Goals and recommendations



Grades of evidence

1. Convincing
2. Probable
3. Limited — suggestive
4. Limited — no conclusion
5. Surely no effect on risk



WG not linked to cancer

Cereals (grains)

The evidence was too limited in amount, consistency, or quality to draw any conclusions.

The Panel is aware that six cohort studies and one case-control study have been published in 2006. This new information does not change the Panels judgements.



2006 studies

Bowers K, Albanes D, Limburg P, et al. A prospective study of anthropometric and clinical measurements associated with insulin resistance syndrome and colorectal cancer in male smokers. *Am J Epidemiol* 2006;164:652-64.

Otani T, Iwasaki M, Ishihara J, et al. Dietary fiber intake and subsequent risk of colorectal cancer: the Japan Public Health Center-based prospective study. *Int J Cancer* 2006;119:1475-80.

Shin A, Li H, Shu XO, et al. Dietary intake of calcium, fiber and other micronutrients in relation to colorectal cancer risk: results from the Shanghai Women's Health Study. *Int J Cancer* 2006;119:2938-42.

Lin J, Zhang SM, Cook NR, et al. Dietary intakes of fruit, vegetables, and fiber, and risk of colorectal cancer in a prospective cohort of women (United States). *Cancer Causes Control* 2005;16:225-33.

MacInnis RJ, English DR, Haydon AM, et al. Body size and composition and risk of rectal cancer (Australia). *Cancer Causes Control* 2006;17:1291-7.

Bingham SA, Norat T, Moskal A, et al. Is the association with fiber from foods in colorectal cancer confounded by folate intake? *Cancer Epidemiol Biomarkers Prev* 2005;14:1552-6.

Wakai K, Hirose K, Matsuo K, et al. Dietary risk factors for colon and rectal cancers: a comparative case-control study. *J Epidemiol* 2006;16:125-35.



The fibre link

Colorectum cancer

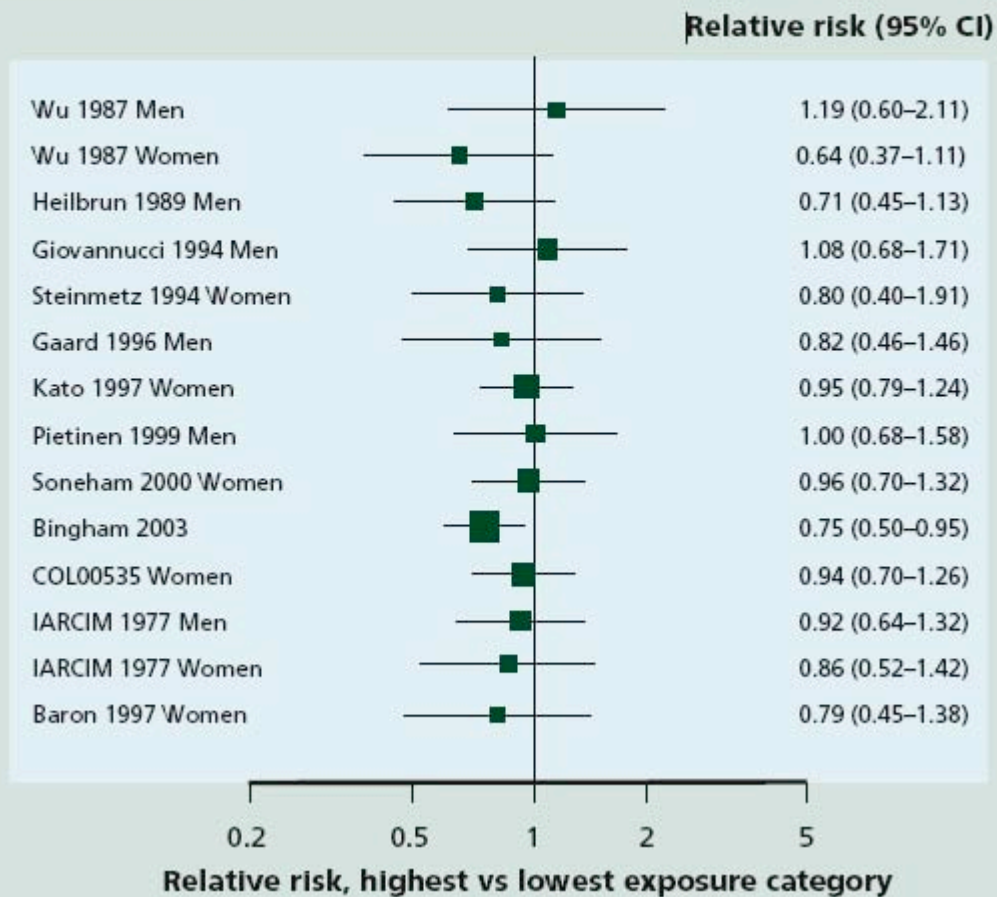
Sixteen cohort studies and 91 case-control studies investigated dietary fibre and colorectal cancer. The Harvard pooling project also analyzed original data from 13 separate cohort studies.



Cohort studies

Figure 4.1.1

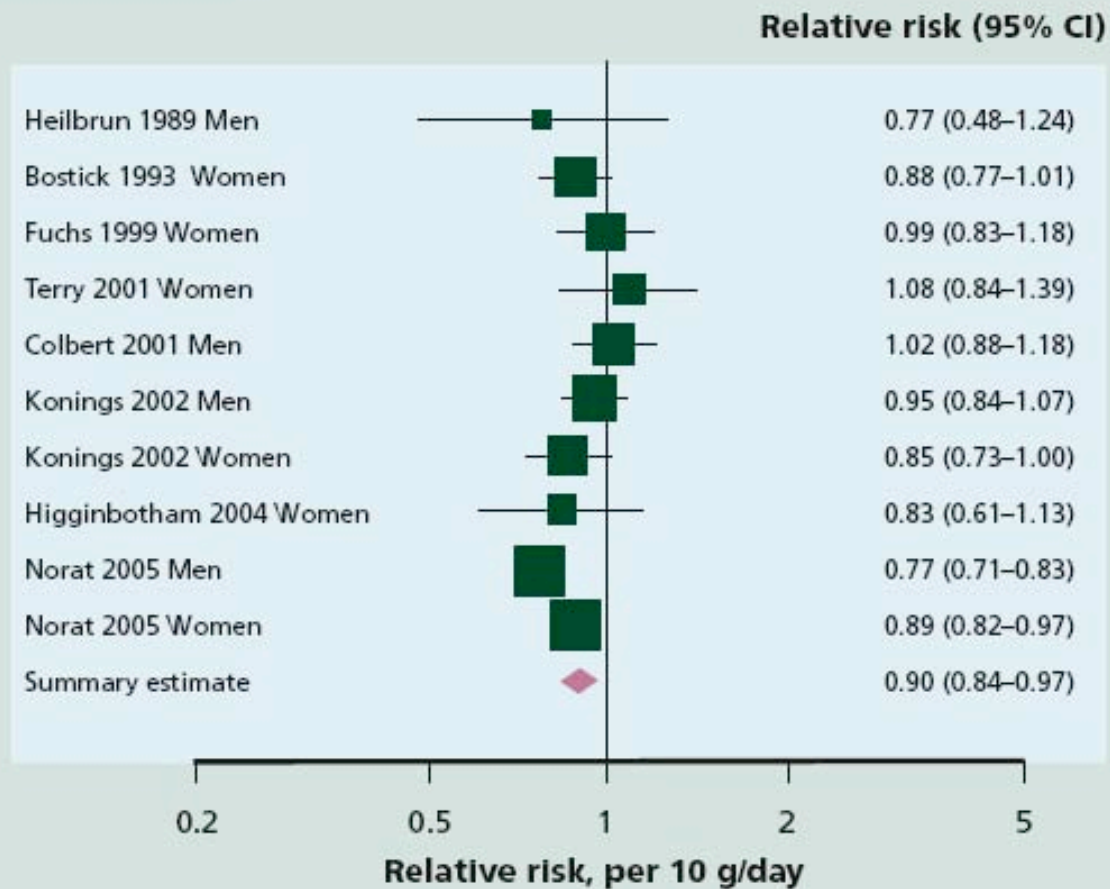
Dietary fibre and colorectal cancer;
cohort studies



Cohort studies

Figure 4.1.2

**Dietary fibre and colorectal cancer;
cohort studies**



Dietary fibre

A clear dose-response relationship is apparent from generally consistent cohort studies, supported by evidence for plausible mechanisms, but residual confounding could not be excluded.

Foods containing dietary fibre probably protect against colorectal cancer.



Grains and cancer

CEREALS (GRAINS), STARCHY ROOTS AND TUBERS, PLANTAINS, AND THE RISK OF CANCER

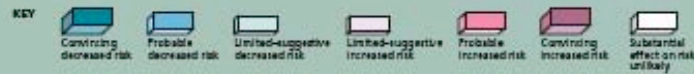
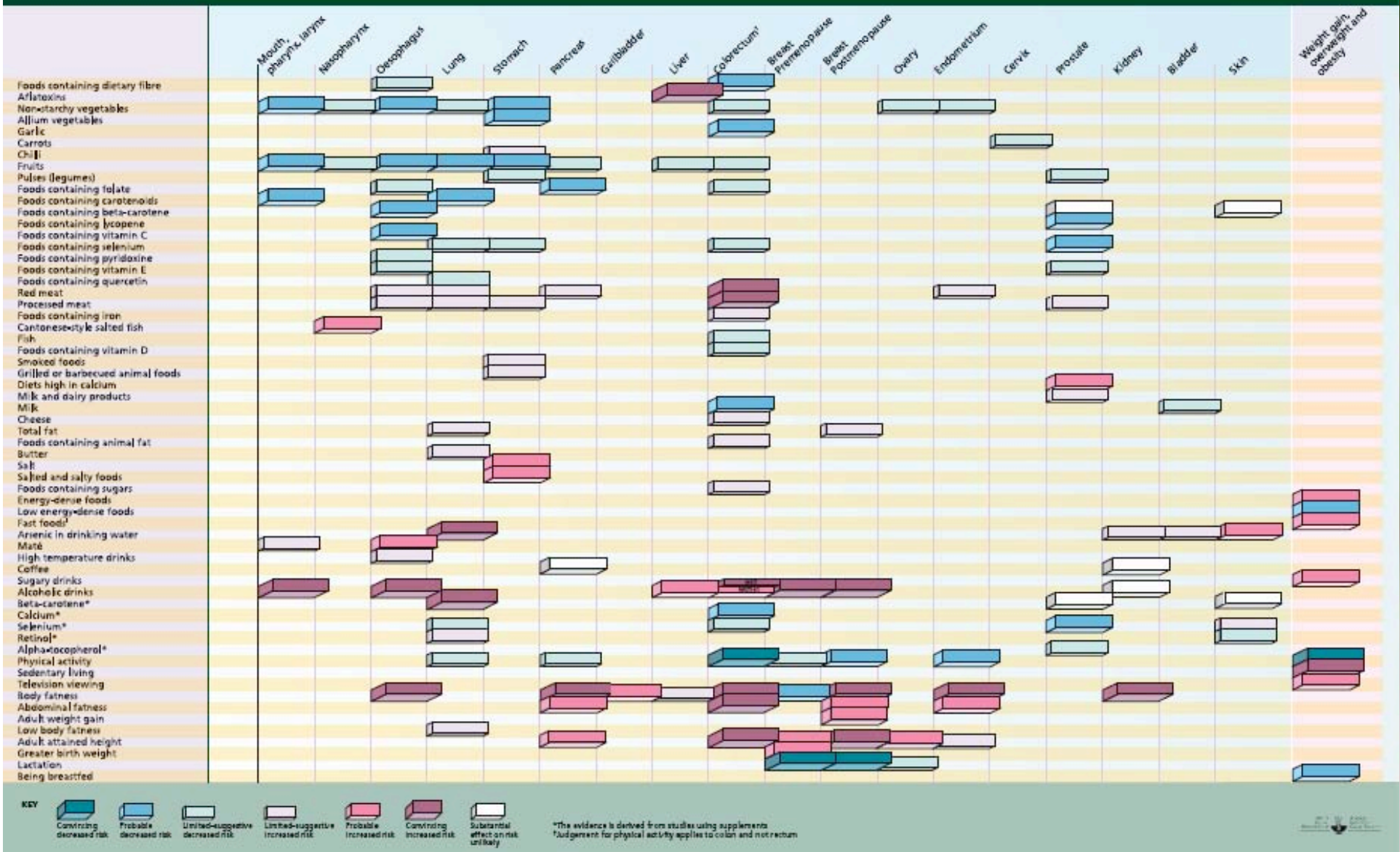
In the judgement of the Panel, the factors listed below modify the risk of cancer. Judgements are graded according to the strength of the evidence.

	DECREASES RISK		INCREASES RISK	
	Exposure	Cancer site	Exposure	Cancer site
Convincing			Aflatoxins¹	Liver
Probable	Foods containing dietary fibre²	Colorectum		
Limited — suggestive	Foods containing dietary fibre ²	Oesophagus		
Substantial effect on risk unlikely	None identified			

- 1 Foods that may be contaminated with aflatoxins include cereals (grains), and also pulses (legumes), seeds, nuts, and some vegetables and fruits (see chapter 4.2).
- 2 Includes both foods naturally containing the constituent and foods which have the constituent added (see chapter 3.5.3). Dietary fibre is contained in plant foods (see chapter 4.2 and box 4.1.2).

For an explanation of all the terms used in the matrix, please see chapter 3.5.1, the text of this section, and the glossary.

Summary of conclusions



*The evidence is derived from studies using supplements
 †Judgement for physical activity applies to colon and not rectum

Recommendations



RECOMMENDATIONS

BODY FATNESS

Be as lean as possible within the normal range of body weight



PHYSICAL ACTIVITY

Be physically active as part of everyday life



FOODS AND DRINKS THAT PROMOTE WEIGHT GAIN

Limit consumption of energy-dense foods
Avoid sugary drinks

PLANT FOODS

Eat mostly foods of plant origin

ANIMAL FOODS

Limit intake of red meat and avoid processed meat



ALCOHOLIC DRINKS

Limit alcoholic drinks

PRESERVATION, PROCESSING, PREPARATION

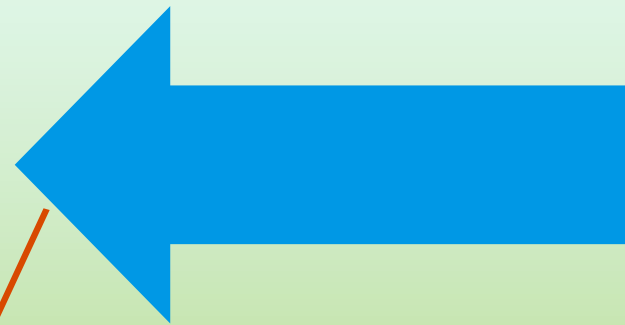
Limit consumption of salt
Avoid mouldy cereals (grains) or pulses (legumes)

DIETARY SUPPLEMENTS

Aim to meet nutritional needs through diet alone

BREASTFEEDING

Mothers to breastfeed; children to be breastfed



RECOMMENDATION 4

PLANT FOODS

Eat mostly foods of plant origin

PUBLIC HEALTH GOALS

Population average consumption of non-starchy¹ vegetables and of fruits to be at least 600 g (21 oz) daily²

Relatively unprocessed cereals (grains) and/or pulses (legumes), and other foods that are a natural source of dietary fibre, to contribute to a population average of at least 25 g non-starch polysaccharide daily

PERSONAL RECOMMENDATIONS

Eat at least five portions/servings (at least 400 g or 14 oz) of a variety² of non-starchy vegetables and of fruits every day

Eat relatively unprocessed cereals (grains) and/or pulses (legumes) with every meal³

Limit refined starchy foods

People who consume starchy roots or tubers⁴ as staples also to ensure intake of sufficient non-starchy vegetables, fruits, and pulses (legumes)



RECOMMENDATION 4

PLANT FOODS

Eat mostly foods of plant origin

...

Eat **relatively** unprocessed cereals (grains)
and/or pulses (legumes) **with every meal**

Limit refined starchy foods

...

Get the report

www.dietandcancerreport.org

