

ABSENCE OF EXCESS BODY FATNESS

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6. EVALUATION

6.1 Cancer-preventive effects in humans

There is *sufficient evidence* in humans for a cancer-preventive effect of absence of excess body fatness. Absence of excess body fatness prevents cancers of the colon and rectum, oesophagus (adenocarcinoma), stomach (gastric cardia), liver (hepatocellular carcinoma), gall bladder, pancreas, breast in postmenopausal women, endometrium, ovary, kidney (renal cell carcinoma), and thyroid, as well as meningioma and multiple myeloma. In addition, inverse associations have been observed between absence of excess body fatness and fatal prostate cancer, diffuse large B-cell lymphoma, and cancer of the breast in men.

6.2 Cancer-preventive effects in experimental animals

There is *sufficient evidence* in experimental animals for a cancer-preventive effect of limitation of body weight gain by dietary restriction. Limitation of body weight gain by dietary restriction prevents cancer of the mammary gland, colon, liver, pancreas, skin, and pituitary gland. In addition, inverse associations have been observed for cancer of the prostate, and for lymphoma and leukaemia.

6.3 Mechanistic and other relevant data

There is *strong* evidence that sex hormone metabolism and inflammation are major mechanisms underlying the link between excess body fatness and certain cancers, whereas there is *moderate* evidence for the role of insulin and insulin-like growth factor. The effects were not uniform across the organ sites considered.

There was generally convincing evidence that a reduction in excess body fatness through intentional weight loss positively affects these biomarkers and mechanisms.

6.4 Overall evaluation

Absence of excess body fatness prevents cancer in humans (Group A). Absence of excess body fatness prevents cancers of the colon and rectum, oesophagus (adenocarcinoma), stomach (gastric cardia), liver (hepatocellular carcinoma), gall bladder, pancreas, breast in postmenopausal women, endometrium, ovary, kidney (renal cell carcinoma), and thyroid, as well as meningioma and multiple myeloma.