



齐齐哈尔医学院附属第三医院

The Third Affiliated Hospital Of Qiqihar Medical University

齐齐哈尔市肿瘤医院

Qiqihar Cancer Hospital

地中海饮食与癌症

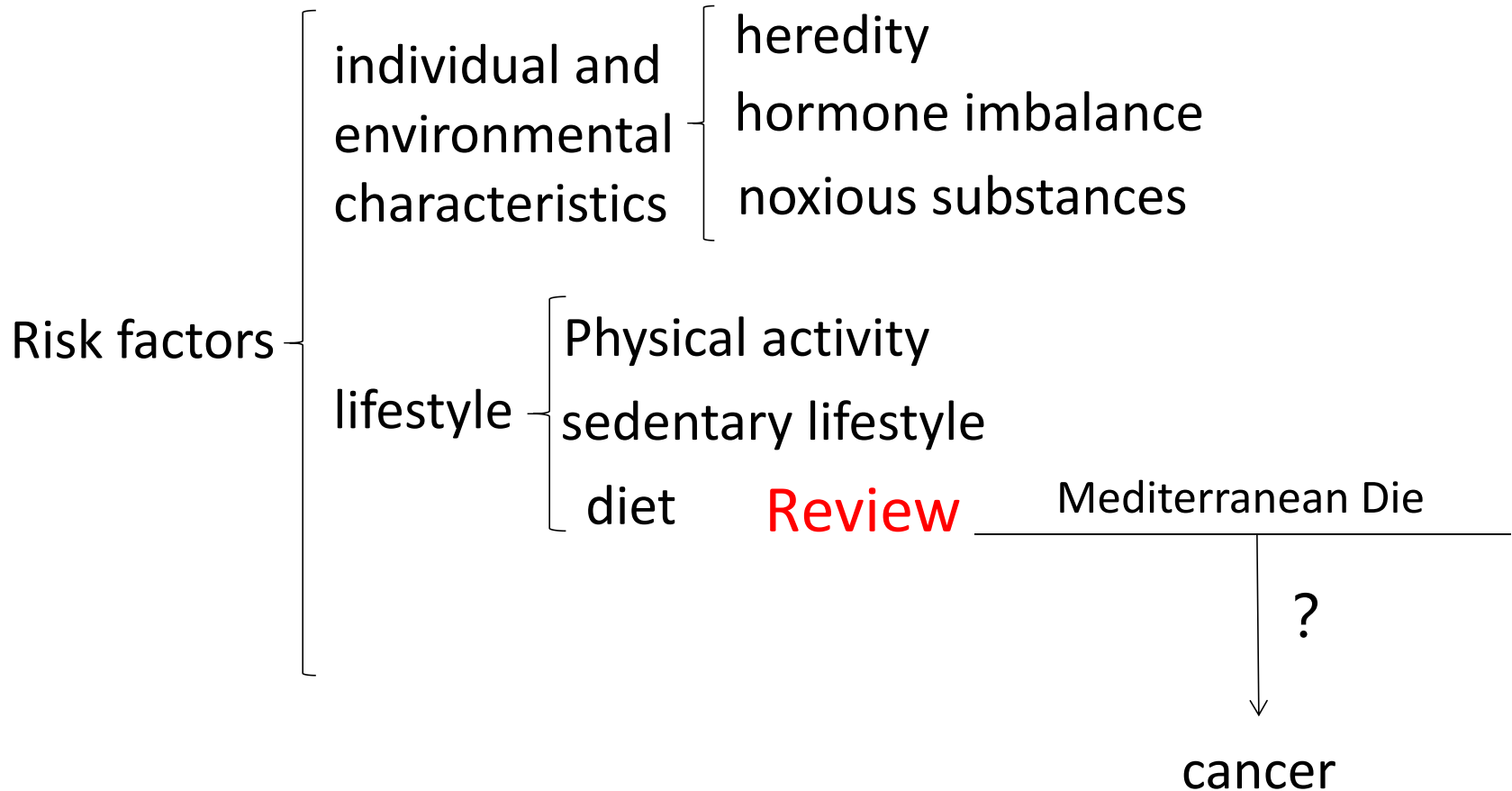
中心实验室
池涛

文献速递



Review

Cancer and Mediterranean Diet: A Review



一、Mediterranean Diet

1.intangible cultural heritage



Mediterranean Diet

High intake : vegetables,legumes,fresh fruit,
non-refined cereals,nuts, and olive oil

Moderate intake : fish,dairy and redwine

Low intake : red meats

—、Mediterranean Diet

Mediterranean Diet Pyramid: a lifestyle for today Guidelines for Adult population

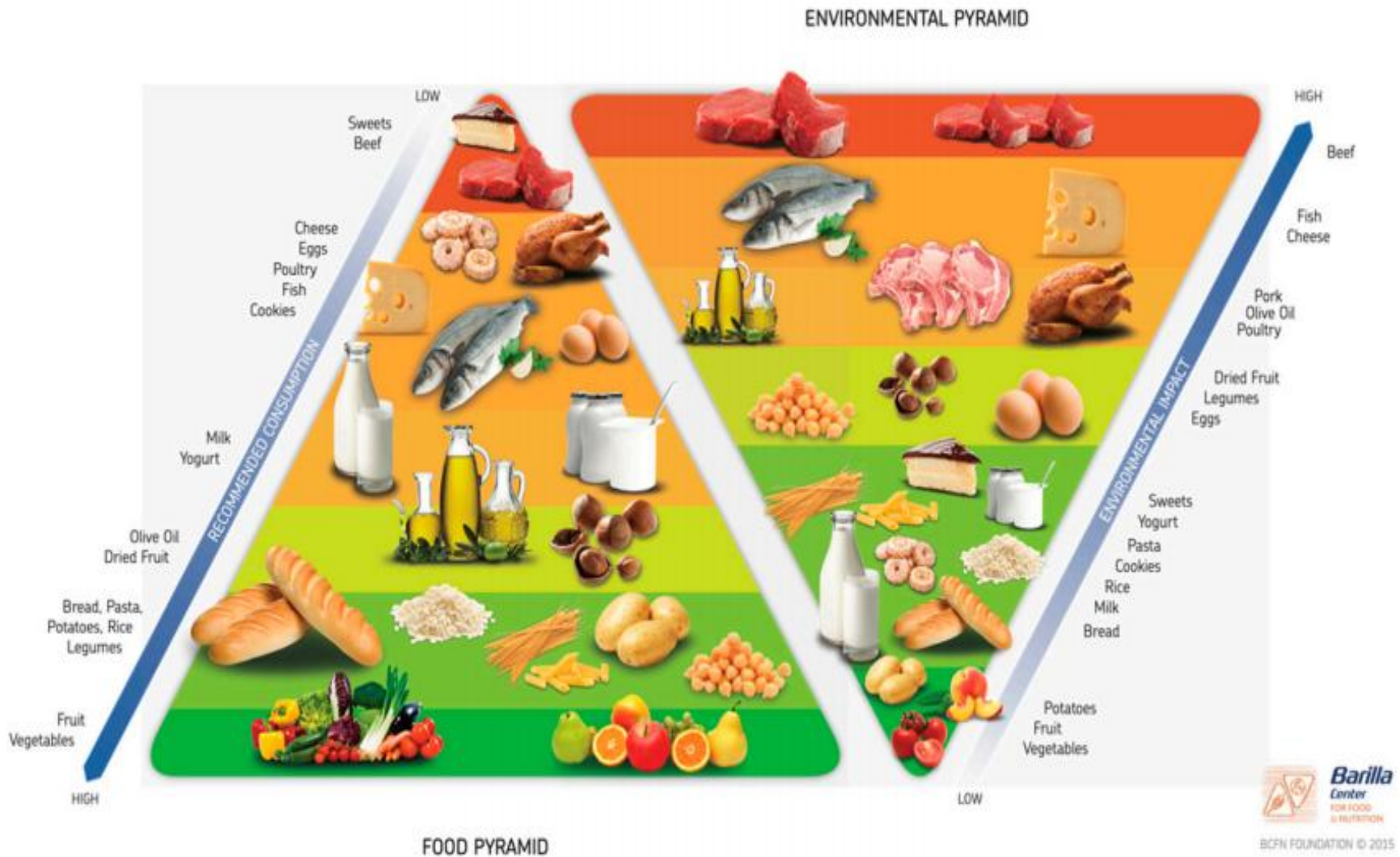
Serving size based on frugality and local habits



© 2010 Fundación Dieta Mediterránea
The use and promotion of this pyramid is recommended without any restriction

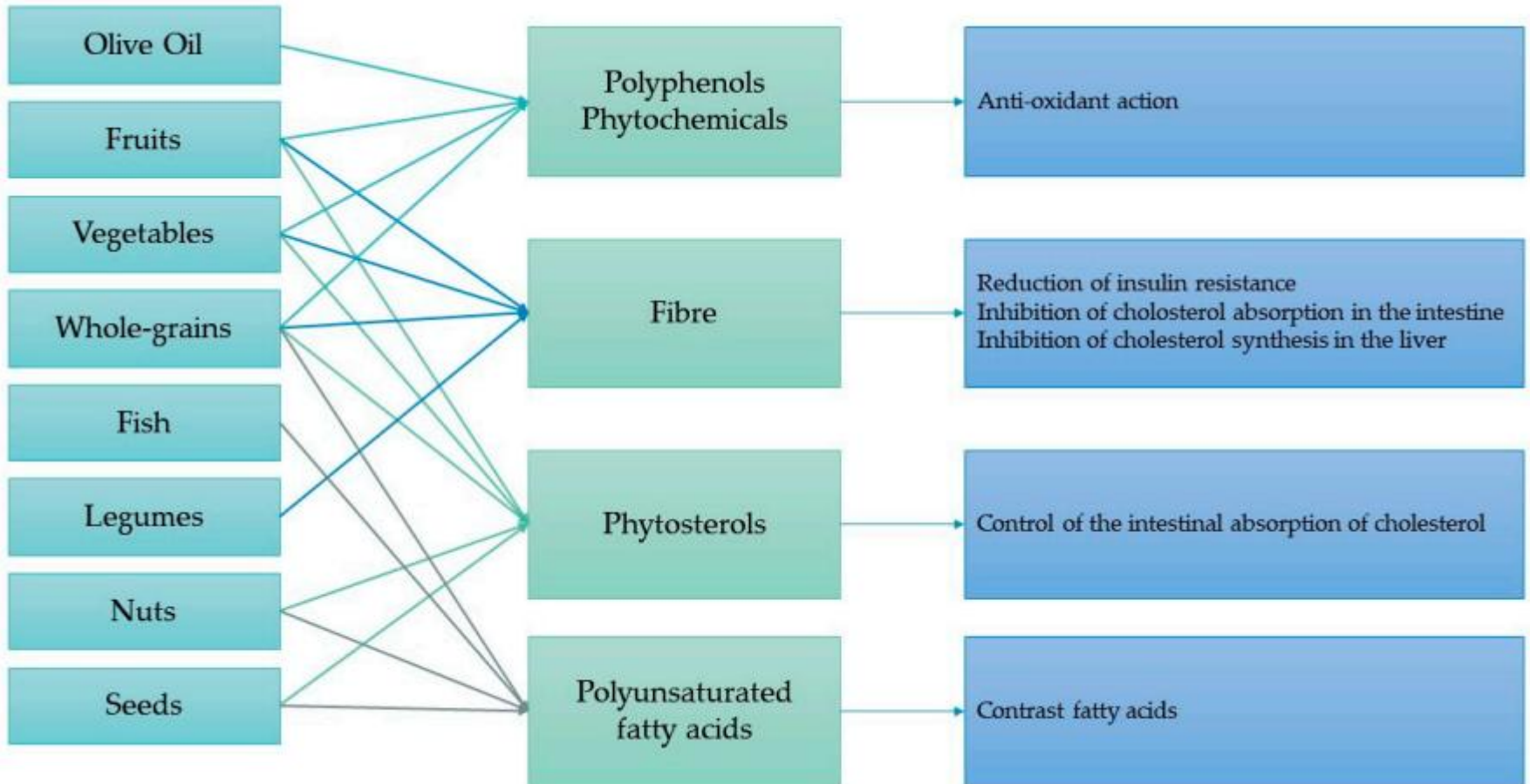
—、Mediterranean Diet

2. More healthy, lower environmental impact



二、Mediterranean Diet and cancer

1. Mechanism between Mediterranean diet components and beneficial effect



二、Mediterranean Diet and cancer

Table 1. Summary of studies reviewed and relationships with statistical significance between MD score and breast cancer.

Study	Study Characteristics	MD Adherence	Objective	Statistical Method	Results
Buckland [97] (2013)	Prospective Study Case-control Sample: 335,062 women Period: 1992 to 2000 Place: Europe	arMED	Incidence of cancer	Cox proportional hazard regression model	$HR_{arMEDhigh \text{ vs. } arMEDlow} = 0.94$ (0.88–1.00) $HR_{arMEDhigh \text{ vs. } arMEDlow} = 0.93$ (0.87–0.99) $HR_{arMEDhigh \text{ vs. } arMEDlow} = 0.80$ (0.65–0.99)
Van den Brandt [94] (2017)	Prospective Study Case-control Sample: 62,573 women aged 55–69 years Period: 1986–2007 Place: Netherlands	Mediterranean Diet Score	Incidence of cancer	Cox proportional hazard regression model	$HR_{MD \text{ high vs. } MD \text{ low}} = 0.60,$ 95% CI: 0.39–0.93
Turati [96] (2018)	Prospective Study Case-control Sample: 6426 women Period: 1991–2008 Place: Italy and Switz	Mediterranean Diet Score	Incidence of cancer	Logistic regression	$OR_{MDS=4-5 \text{ vs. } MDS=0-3} = 0.86$ (0.76–0.98) $OR_{MDS=6-9 \text{ vs. } MDS=0-3} = 0.82$ (0.71–0.95) $OR_{MDS=4-5 \text{ vs. } MDS=0-3} = 0.81,$ (0.71–0.91)

二、Mediterranean Diet and cancer

Table 2. Summary of studies reviewed and relationships with statistical significance between MD score and colorectal cancer.

Study	Study Characteristics	MD Adherence	Objective	Statistical Method	Results
Castello [108] (2018)	Multicase-control study Sample: 5138 Period: 2008–2013 Place: 11 Spanish provinces	A posteriori score	Incidence of cancer	Logistic regression	Men: $OR_{Q4 \text{ vs. } Q1} = 0.71$ (0.55–0.92) Women: $OR_{Q4 \text{ vs. } Q1} = 0.65$, (0.40–0.77) Proximal colon: $OR_{Q4 \text{ vs. } Q1} = 0.70$ (0.51–0.97) Distal colon: $OR_{Q4 \text{ vs. } Q1} = 0.65$ (0.48–0.89) Rectum: $OR_{Q4 \text{ vs. } Q1} = 0.60$, (0.45–0.81)
Fliss-Isakov [13] (2018)	Case-control study Sample: 783 patients Period: 2010–2015 Place: Israel	A posteriori score	Incidence of cancer	Multivariate logistic regression	$OR_{MDS = 3-4} = 0.34$ (0.17–0.65), $OR_{MDS = 5-7} = 0.22$ (0.11–0.43); $OR_{MDS = 8-10} = 0.18$ (0.07–0.47)
Rosato [109] (2016)	Case-control study Sample: 10,549 patients Period: 1985–1991 Place: Milan (Italy)	Mediterranean Diet Score	Incidence of cancer	Unconditional logistic regression	$OR = 0.89$, 95% CI: 0.86–0.91 (for each 1-point increase of MD)
Ratjen [110] (2017)	Prospective cohort study Sample: 1404 CRC patients Period: 2004–2007 Place: Northern Germany	A posteriori score	Mortality rate in CRC patients	Cox proportional hazard regression model	$HR_{\text{highest quartile vs. lowest quartile}} = 0.48$ (0.32–0.74) $HR_{\text{highest quartile vs. lowest quartile}} = 0.88$ (0.81–0.96) (for each 1-point increase of MD)

二、Mediterranean Diet and cancer

Table 3. Summary of studies reviewed and relationships with statistical significance between MD score and prostate cancer.

Study	Study Characteristics	MD Adherence Measurement	Objective	Statistical Method	Results
Schneider [114] (2019)	Prospective study Sample: 2258 patients Period: 2004–2009 Place: North Carolina, Louisiana (USA)	Mediterranean Diet Score	Incidence of cancer	Multivariate logistic regression	OR _{high score vs. low score} = 0.66 (0.46–0.95)
Kenfield [115] (2015)	Prospective study Sample: 47,867 men Period: 1986–2010 Place: USA	Mediterranean Diet Score	Mortality rate in patients without metastasis	Cox proportional hazard regression model	HR = 0.78 (0.67–0.90)
Russo [85] (2018)	Case-control Sample: 356 patients Period: 2015–2016 Place: Catania (Italy)	MEDILITE score	Incidence of cancer	Multivariate logistic regression	or = 0.86 (0.77–0.96) (for each 1-point increase of MD score)

二、Mediterranean Diet and cancer

Gastric Cancer

Bladder Cancer

Malignant Tumors of the Female Reproductive System

Head-Neck Cancer

Biliary Tract Cancer (BTC)

Pancreatic Tumors

Lung Cancer

二、Mediterranean Diet and cancer

Typical Foods	Elements	Function	Cancer
Fruits & Vegetables	Antioxidants and micronutrients (carotenoids, vitamin C, vitamin E, selenium, dietary fiber, dithiolthiones, glucosinates, polyphenols, protease inhibitors, allium compounds, plant sterols, and limonene)	Anti-tumorigenic effect	Less risk of: -Epithelial cancer -Digestive tract cancer -Breast cancer -Female genital tract cancer -Urinary tract cancer
Fish	Long-chain omega-3 fatty acids docosahexaenoic acid and eicosapentaenoic acid	Reducing tumor cell growth Modulation of transcription factor activity and signal transduction Alteration of oestrogen metabolism	Less risk of: -Liver cancer -Colorectal cancer
	Heterocyclic amines and polycyclic aromatic hydrocarbons may be formed when fish is cooked on a grill or barbecue	Production of mutagenic chemicals	High risk of stomach cancer
Olive oil	Polyphenols (oleuropein and hydroxytyrosol)	Antioxidant activity, anti-inflammatory and anti-mutagenic effects	Less risk of: -breast cancer -ovarian cancer
	Oleic acid, poly unsaturated fatty acids (PUFA), low n-6 PUFA/n-3 PUFA ratio	Chemoprotective effect	-upper aero-digestive tract cancer
Meat	Heterocyclic amines and polycyclic aromatic hydrocarbons formed when meat is cooked at high temperatures	Carcinogens	-colorectal cancer High risk of: -colorectal cancer -nasopharynx cancer -lung cancer -pancreatic cancer -bladder cancer -esophagus cancer (squamous cell carcinoma)
	Haem iron, present in high level	Promotion of tumorigenesis by stimulating the endogenous formation of carcinogenic N-nitroso compounds	-stomach (no-cardia) cancer
	High-temperature cooking of red and processed meats may enhance production of advanced glycation endproducts (AGEs).	Produce several cancer-promoting effects	High risk of pancreatic cancer
	Consumption of meat may lead to insulin resistance and hyperinsulinemia, promoting growth of cancer cells	Promoting growth of cancer cells	

二、Mediterranean Diet and cancer

Whole grains	Provide various nutrients: vitamin E, selenium, copper, zinc and bioactive non-nutrient compounds (lignans, phytoestrogens, and phenolic compounds), and dietary fiber	Anti-carcinogenic properties, as anti-oxidative activity Reduce insulin resistance	Less risk of: -colorectum cancer -upper aero-digestive tract -stomach cancer -breast cancer -ovarian cancer -kidney cancer
	Aflatoxin (mycotoxin produced by molds of the <i>Aspergillus</i> species)	High mutation load in TP3	High risk of liver cancer
Dairy Products	Calcium, lactic acid-producing bacteria, vitamin D, linoleic acids, lactoferrin,	Inhibit tumor development	Less risk of: -breast cancer (pre-menopausal and post-menopausal women) -colorectal cancer
	High level of calcium	Downregulating the formation of the biologically active form of vitamin D → increasing cellular proliferation	Higher risk of prostate cancer
Red Wine	Phytoalexin presents in grape skin	Antioxidant and cancer chemo preventive agent → inhibiting tumor initiation, promotion and progression	Controversial results about impact
	Resveratrol and quercetin	Modulating cell cycle-regulating proteins Inducing apoptosis in multiple carcinoma cell lines Anti-inflammatory, growth → inhibiting activity and immunomodulation properties	

谢谢！