

2016	DIET, NUTRITION, PHYSICAL ACTIVITY AND OESOPHAGEAL ADENOCARCINOMA		
		DECREASES RISK	INCREASES RISK
STRONG EVIDENCE	Convincing		Body fatness ¹
	Probable		
LIMITED EVIDENCE	Limited – suggestive	Vegetables Physical activity ²	
	Limited – no conclusion	Dietary fibre, fruit, red meat, processed meat, total meat, poultry, fish, coffee, high-temperature drinks, mate, alcohol, pyridoxine, vitamin C, vitamin E, folate, beta-carotene, adult attained height, patterns of diet, cereals (grains) and their products, starchy roots, tubers and plantains, pulses (legumes), soya and soya products, herbs spices and condiments, milk and dairy products, total fat, saturated fatty acids, monounsaturated fatty acids, polyunsaturated fatty acids, sugary foods and drinks, salt, salting, fermenting, pickling, smoked and cured foods, nitrates and nitrites, frying, grilling (broiling) and barbecuing (charbroiling), protein, vitamin A, retinol, thiamin, riboflavin, calcium, iron, zinc, pro-vitamin A carotenoids, beta-cryptoxanthin and energy intake	
STRONG EVIDENCE	Substantial effect on risk unlikely		

1 Body fatness is marked by body mass index (BMI), waist circumference and waist-hip ratio.

2 Adenocarcinoma and squamous cell carcinoma combined.

2016	DIET, NUTRITION, PHYSICAL ACTIVITY AND OESOPHAGEAL SQUAMOUS CELL CARCINOMA		
		DECREASES RISK	INCREASES RISK
STRONG EVIDENCE	Convincing		Alcoholic drinks
	Probable		Mate ¹
LIMITED EVIDENCE	Limited – suggestive	Vegetables Fruit Physical activity ²	Processed meat
	Limited – no conclusion	Dietary fibre, red meat, total meat, poultry, fish, coffee, high-temperature drinks, pyridoxine, vitamin C, vitamin E, folate, beta-carotene, body fatness, adult attained height, patterns of diet, cereals (grains) and their products, starchy roots, tubers and plantains, pulses (legumes), soya and soya products, herbs spices and condiments, milk and dairy products, total fat, saturated fatty acids, monounsaturated fatty acids, polyunsaturated fatty acids, sugary foods and drinks, salt, salting, fermenting, pickling, smoked and cured foods, nitrates and nitrites, frying, grilling (broiling) and barbecuing (charbroiling), protein, vitamin A, retinol, thiamin, riboflavin, calcium, iron, zinc, pro-vitamin A carotenoids, beta-cryptoxanthin and energy intake	
STRONG EVIDENCE	Substantial effect on risk unlikely		

1 As drunk traditionally in parts of South America, scalding hot through a metal straw.

2 Adenocarcinoma and squamous cell carcinoma combined.

Summary of CUP 2015 meta-analysis and published meta-analysis of oesophageal adenocarcinoma – vegetables

Analysis	Increment/ Contrast	RR (95% CI)	I ²	No. Studies	No. Cases
CUP Oesophageal Cancer SLR 2015 adenocarcinoma	Per 100g/day	0.89 (0.80–0.99)	0%	3	415
Li, 2014 [26] Per 100g/day	Per 100g/day (6 studies)	0.91 (0.83–0.99)	23%	9 (3 cohort ¹ 6 case-control)	1,572
	Highest vs. lowest (cohort)	0.76 (0.54–1.05)	0%	3 cohorts ¹	

¹All cohorts were included in the CUP analysis.

Summary of CUP 2015 meta-analysis and published meta-analysis of oesophageal squamous cell carcinoma – vegetables

Analysis	Increment/ Contrast	RR (95% CI)	I ²	No. Studies	No. Cases
CUP Oesophageal Cancer SLR 2015 Squamous cell carcinoma	Per 100g/day	0.91 (0.81–1.03)	49%	4	2,273
Liu, 2013 [28]	Per 100g/day	0.84 (0.78–0.92)	82%	15 (4 cohort ¹ , 11 case-control)	6,509
		0.92 (0.84–1.01)	61%	4 cohort ¹	2,278
	Highest vs. lowest	0.80 (0.60–1.06)	36%	5 cohort ²	2,379

¹ All cohorts were included in the CUP analysis.

² One cohort [29] was identified in the CUP but not included in the dose-response analysis.

Summary of CUP 2015 meta-analyses and published meta-analyses of oesophageal squamous cell carcinoma – fruit

Analysis	Increment/ Contrast	RR (95% CI)	I ²	No. Studies	No. Cases
CUP Oesophageal Cancer SLR 2015 Squamous cell carcinoma	Per 100g/day	0.84 (0.75–0.94)	0%	3	320
Liu, 2013 [28]	Per 100g/day	0.61 (0.52–0.72)	90%	18 studies (4 cohort, 14 case- control)	6,927
		0.87 (0.82–0.91)	0%	4 cohort	2,278
	Highest vs. lowest	0.68 (0.55–0.86)	25%	5 cohort ¹	2,379

¹ One cohort [29] was identified in the CUP but not included in the dose-response analysis.

Summary of CUP 2015 meta-analysis and published meta-analyses of oesophageal squamous cell carcinoma – processed meat

Analysis	Increment/ Contrast	RR (95% CI)	I ²	No. Studies	No. Cases
CUP Oesophageal Cancer SLR 2015 Squamous cell carcinoma	Per 50g/day	1.34 (1.00–1.81)	0%	2	322
Zhu, 2014 [38]	Highest vs. lowest	1.34 (0.62–2.92)	69%	2 ¹	1,737
Qu, 2013 [39]	Highest vs. lowest	1.41 (1.11–1.78)	0%	8 cohort ¹ and case- control	-
		1.28 (0.88–1.86)	0%	2 cohort ¹	322
	Per 50g/day	1.42 (0.98–2.05)	0%	2 cohort ¹	322

¹ All cohorts included in the CUP analysis.

Summary of pooled analysis and published meta-analysis of oesophageal squamous cell carcinoma – mate

Analysis	Increment/ Contrast	RR (95% CI)	I ²	No. Studies	No. Cases	Comments
Lubin, 2014 [46]	Ever vs. never	1.60 (1.2–2.2)	-	2 case- control	1,391	Adjusted for smoking, alcohol consumption, age, sex, sex by education, and for Uruguay income and urban/rural residence. Odds ratios increased linearly with cumulative mate consumption.
	Warm vs. never	1.20 (0.8–1.7)			168	
	Hot vs. never	1.61 (1.2–2.2)			929	
	Very hot vs. never	2.15 (1.5–3.1)			213	
Andrici, 2013 [47]	Ever vs. never	2.57 (1.66– 3.98)	65%	9 case- control ¹	1,565	

¹ Includes the studies used in the published pooled analysis [46]

Summary of CUP 2015 highest vs. lowest meta-analyses of oesophageal squamous cell carcinoma – alcohol

Analysis	Increment/Contrast	RR (95% CI)	I ²	No. Studies	No. Cases
Beer	Highest vs. lowest	2.56 (1.18–5.57)	44%	2	
Wine	Highest vs. lowest	0.81 (0.09–7.01)	68%	2	
Spirits	Highest vs. lowest	2.77 (0.98–7.84)	73%	2	
Spirits¹	Highest vs. lowest	3.41 (2.16–5.38)	42%	4	

¹ Squamous cell carcinoma and Asian studies

Summary of CUP 2015 meta-analysis and published pooled analysis of oesophageal squamous cell carcinoma – alcohol

Analysis	Increment/ Contrast	RR (95% CI)	I ²	No. Studies	No. Cases	Comments
CUP Oesophageal SLR 2015 Squamous cell carcinoma	Per 10g/day	1.25 (1.12–1.41)	95%	6	-	
Freedman, 2011¹ (BEACON Consortium)	≥7 drinks/ day vs. none	9.62 (4.26–21.71)	<0.0001	5 case- control, 2 cohort	1,016	Adjusted for sex, age, body mass index, education, pack-years of smoking and, where available, for gastro- oesophageal reflux

¹ The Kaiser-Permanente Multiphasic Health check-up and NIH-AARP Diet and Health studies are included in the CUP analyses.

Summary of studies of physical activity and oesophageal cancer

Analysis	Study	Cancer Type	RR (95% CI)	Contrast
Physical activity index	Huerta, 2010 [70]	Adenocarcinoma ¹	0.98 (0.48–2.01)	Active vs. inactive
Occupational physical activity	Cook, 2013 [71]	Adenocarcinoma ¹	0.60 (0.34–1.07)	Heavy work vs. all day sitting
		Squamous cell carcinoma ¹	0.73 (0.27–2.01)	
	Huerta, 2010 [70]	Adenocarcinoma ¹	0.95 (0.41–2.20)	Manual work vs. sedentary occupation
Recreational physical activity	Cook, 2013 [71]	Adenocarcinoma ¹	0.98 (0.69–1.39)	Typical moderate-vigorous activity in last 10 years: >7 hours/week vs. never
		Squamous cell carcinoma ¹	0.88 (0.49–1.58)	
	Huerta, 2010 [70]	Adenocarcinoma ¹	0.63 (0.32–1.22)	Recreational and household activity: Very high vs. low
	Yun, 2008 [72]	Oesophageal ¹	0.84 (0.66–1.06)	Vigorous, sweat-producing activity: Moderate-high vs. low
	Suzuki ² , 2007 [73]	Oesophageal ³	0.81 (0.50–1.31)	Sports: >3 vs. <1 hours/week
Vigorous physical activity	Cook, 2013 [71]	Squamous cell carcinoma ¹	0.84 (0.47–1.52)	Strenuous physical activity during last 12 months: >5 times/week vs. never
		Adenocarcinoma ¹	0.74 (0.49–1.12)	
	Huerta, 2010 [70]	Adenocarcinoma ¹	0.72 (0.36–1.42)	Vigorous physical activity: >2 hours/week vs. none
	Leitzmann, 2009 [74]	Squamous cell carcinoma ¹	1.05 (0.64–1.74)	Physical activity lasting ≥20 minutes and caused increase in breathing, heart rate or sweating: ≥5 vs. 0 times/week
		Adenocarcinoma ¹	0.75 (0.53–1.06)	
	Yun, 2008 [72]	Oesophageal ¹	0.84 (0.66–1.06)	Vigorous, sweat-producing leisure time physical activity: Moderate-high vs. low
Walking	Huerta, 2010 [70]	Adenocarcinoma ¹	0.73 (0.32–1.67)	Tertile 3 vs. never
	Suzuki ² , 2007 [73]	Oesophageal ³	Men: 0.97 (0.63–1.50)	>1 vs. <0.5 hours/day
			Women: 0.57 (0.23–1.4)	

¹ Incidence. ² Not adjusted for smoking. ³ Mortality.

Summary of CUP 2015 meta-analysis and published pooled analysis – BMI

Analysis	Increment	RR (95% CI)	I ²	No. Studies	No. Cases	Factors adjusted for
CUP Oesophageal Cancer SLR 2015 adenocarcinoma	Per 5 kg/m ²	1.48 (1.35–1.62)	37%	9	1,725	
Me-Can [93]	Per 5 kg/m ²	1.78 (1.45–2.17)	-	7		Adjusted for sex, age at baseline, smoking status
BEACON Consortium [94]	Per 1 kg/m ²	1.09 (1.06–1.12)	76%	2 cohorts, 10 case- control	1,897	Adjusted for age, gender, pack-years of smoking, education, and other study-specific adjustment variables (e.g., study centre) where applicable
CUP additional analysis: Pooled analysis of Me- Can studies [93] combined with all studies from the CUP	Per 5 kg/m ²	1.51 (1.38–1.65)	43%	16 cohorts	1,839	

Note: The seven component cohorts in the Me-Can study [93] and the Kaiser Permanente Cohort in the BEACON Consortium [94] did not publish results previously. Sensitivity analysis was conducted by including the pooled results from the Me-Can study [93].