



RED MEAT AND PROCESSED MEAT

VOLUME 114

This publication represents the views and expert opinions of an IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, which met in Lyon, 6–13 October 2015

LYON, FRANCE - 2018

IARC MONOGRAPHS
ON THE EVALUATION
OF CARCINOGENIC RISKS
TO HUMANS

Table 2.5.2 Cohort studies: Processed meat and cancer of the prostate (web-only)

Reference, location enrolment/follow-up period, study design	Population size, description, exposure assessment method	Organ site	Exposure category or level	Exposed cases/ deaths	Risk estimate (95% CI)	Covariates controlled
Major et al. (2011) USA enrolment 1995–1996 Cohort	Prospective cohort 7,949 men; NIH-AARP Diet and Health Study, men and women aged 50–7 years. 556 401 persons including 9,304 African-American men (after exclusions 7,949) Exposure assessment method: Questionnaire; 124-item food frequency questionnaire on previous 12 months. “red meat” included all types of beef and pork and “processed meats” included bacon, sausage, luncheon meats, cold cuts, ham, regular hot dogs, and low-fat hot dogs made from poultry. Daily intake of food was energy adjusted using the nutrient density method.	Prostate	Processed meat, quintile (median intake in g)			Age, BMI, smoking, education, marital status, alcohol consumption, health status, family history of prostate cancer, family history of diabetes, fruit intake
			Q1 (2.10)	244	-	
			Q2 (5.68)	223	0.97 (0.8–1.16)	
			Q3 (9.61)	205	0.95 (0.78–1.15)	
			Q4 (14.96)	226	1.07 (0.88–1.3)	
			Q5 (26.48)	191	0.94 (0.76–1.14)	
			Trend-test p-value: 0.76			
Wu et al. (2016) International pooled cohort consortium 1985–2009 Cohort	842 149 men; Consortium of 15 cohort studies (52 683 incident prostate cancer cases, including 4,924 advanced cases) Exposure assessment method: Questionnaire	Prostate (Aggressive/Advanced)	Quantiles of processed meat intake (g/day)			Marital status, race, education, BMI, height, alcohol intake, total energy intake, smoking status, family history of prostate cancer, physical activity, history of diabetes, multivitamin use
			Q1 (< 5)	NR	1	
			Q2 (5 – < 10)	NR	1.06 (0.93–1.22)	
			Q3 (10 – < 20)	NR	1.16 (1.02–1.32)	
			Q4 (20 – < 40)	NR	1.04 (0.9–1.2)	
			Q5 (≥ 40)	NR	1.17 (0.99–1.39)	
			Trend-test p-value: 0.10			

References

- Major JM, Cross AJ, Watters JL, Hollenbeck AR, Graubard BI, Sinha R (2011). Patterns of meat intake and risk of prostate cancer among African-Americans in a large prospective study. *Cancer Causes Control*. 22(12):1691–8. PMID:21971816 <http://dx.doi.org/10.1007/s10552-011-9845-1>
- Wu K, Spiegelman D, Hou T, Albanes D, Allen NE, Berndt SI, et al. (2016). Associations between unprocessed red and processed meat, poultry, seafood and egg intake and the risk of prostate cancer: A pooled analysis of 15 prospective cohort studies. *Int J Cancer*. 138(10):2368–82. PMID:26685908 <http://dx.doi.org/10.1002/ijc.29973>