

CANCER

Tomato/Tomato-based foods and Disease Risk

Breast Cancer- main findings

- Data support a neutral relationship between the intake of processed tomatoes and breast cancer risk.

Summary of studies and outcomes

- Number of studies = 7
- Risk estimates (RE) = 7
 - (-) = 2
 - N = 5
- Risk estimates by Tomato or Lycopene category
 - √GT G. Tom = 2 (-)
 - √PT P. Tom = 5 (N)
 - √FT F. Tom = 0
 - √Lyco Lyco = 0

Table: Relationship between Tomato/Tomato-based foods and Risk for Breast Cancer

Study Type	N= studies	NEGATIVE ASSOCIATION (protective)					NEUTRAL ASSOCIATION (no associated risk or benefit)					POSTIVE ASSOCIATION (risk factor)				
		Sample size, n=					Sample size, n=					Sample size, n=				
Breast		≤100	101-200	201-500	501-1000	≥1000	≤100	101-200	201-500	501-1000	≥1000	≤100	101-200	201-500	501-1000	≥1000
RCT	0															
Interv	1						√PT									
PC	4					√GT			√PT √PT		√PT					
CC	2			√GT							√PT					
Cross Sec	0															
Eco	0															

Colorectal Cancer- main findings

- Data are mixed and inconclusive

Summary of studies and outcomes

- Number of studies = 2
- Risk estimates (RE) = 2

- (-) = 1
- N = 1
- Risk estimates by Tomato or Lycopene category
 - \sqrt{GT} G. Tom = 1 (-)
 - \sqrt{PT} P. Tom = 1 N
 - \sqrt{FT} F. Tom = 0
 - \sqrt{Lyco} Lyco = 0

Table: Relationship between Tomato/Tomato-based foods and Risk for Colorectal Cancer

Study Type	N= studies	NEGATIVE ASSOCIATION (protective)					NEUTRAL ASSOCIATION (no associated risk or benefit)					POSTIVE ASSOCIATION (risk factor)				
		Sample size, n=					Sample size, n=					Sample size, n=				
Colorectal		≤100	101-200	201-500	501-1000	≥1000	≤100	101-200	201-500	501-1000	≥1000	≤100	101-200	201-500	501-1000	≥1000
RCT	1	\sqrt{PT}														
Interv	0															
PC	0															
CC	1									\sqrt{GT}						
Cross Sec	0															
Eco	0															

Gastric Cancer- main findings

- Data support a protective effect of eating tomatoes and reduced risk of gastric cancer.

Summary of studies and outcomes

- Number of studies = 4
- Risk estimates (RE) = 7
 - (-) = 7
- Risk estimates by Tomato or Lycopene category
 - \sqrt{GT} G. Tom = 3 (-)
 - \sqrt{PT} P. Tom = 1 (-)
 - \sqrt{FT} F. Tom = 2 (-)
 - \sqrt{Lyco} Lyco = 1 (-)

Table: Relationship between Tomato/Tomato-based foods and Risk for Gastric Cancer

Study Type	N= studies	NEGATIVE ASSOCIATION (protective)					NEUTRAL ASSOCIATION (no associated risk or benefit)					POSTIVE ASSOCIATION (risk factor)				
		Sample size, n=					Sample size, n=					Sample size, n=				
Gastric		≤100	101-200	201-500	501-1000	≥1000	≤100	101-200	201-500	501-1000	≥1000	≤100	101-200	201-500	501-1000	≥1000
RCT	0															
Interv	0															
PC	0															
CC	4			√ _{GT} √ _{GT} √ _{PT} √ _{FT} √ _{Lyco}	√ _{FT}											
Cross Sec	0															
Eco	0															

* More than 1 risk estimate may be derived from a study within a study type.

Lung Cancer- main findings

- Data support a protective relationship between the intake of tomato-based foods and lung cancer risk.

Summary of studies and outcomes

- Number of studies = 6
- Risk estimates (RE) = 6
 - (-) = 6
- Risk estimates by Tomato or Lycopene category
 - √_{GT} G. Tom = 5 (-)
 - √_{PT} P. Tom = 1 (-)
 - √_{FT} F. Tom = 0
 - √_{Lyco} Lyco = 0

Table: Relationship between Plasma/serum Lycopene and Risk for Lung Cancer

Study Type	N= studies	NEGATIVE ASSOCIATION (protective)					NEUTRAL ASSOCIATION (no associated risk or benefit)					POSTIVE ASSOCIATION (risk factor)				
		Sample size, n=					Sample size, n=					Sample size, n=				
Lung		≤100	101-200	201-500	501-1000	≥1000	≤100	101-200	201-500	501-1000	≥1000	≤100	101-200	201-500	501-1000	≥1000
RCT	0															
Interv	0															
PC	0															
CC	5	√						√	√√							
Cross Sec	0															
Eco	0															

√ Relationship between serum lycopene concentrations and lung cancer.

Ovarian Cancer- main findings

- Data support a neutral relationship between tomato intake and ovarian cancer risk.

Summary of studies and outcomes

- Number of studies = 2
- Risk estimates (RE) = 2
 - (-) = 1
 - N = 1
- Risk estimates by Tomato or Lycopene category
 - √GT G. Tom = 1 (-)
 - √PT P. Tom = 1 (N)
 - √FT F. Tom = 0
 - √Lyco Lyco = 0

Table: Relationship between Tomato/Tomato-based foods and Risk for Ovarian Cancer

Study Type	N= studies	NEGATIVE ASSOCIATION (protective)					NEUTRAL ASSOCIATION (no associated risk or benefit)					POSTIVE ASSOCIATION (risk factor)				
		Sample size, n=					Sample size, n=					Sample size, n=				
Ovarian		≤100	101-200	201-500	501-1000	≥1000	≤100	101-200	201-500	501-1000	≥1000	≤100	101-200	201-500	501-1000	≥1000
RCT	0															
Interv	0															
PC	1	√ _{GT}														
CC	1									√ _{PT}						
Cross Sec	0															
Eco	0															

* More than 1 risk estimate may be derived from a study within a study type.

Pancreatic Cancer- main findings

Data suggest a potential protection between the intake of tomatoes and pancreatic cancer risk. The data are limited.

Summary of studies and outcomes

- Number of studies = 2
- Risk estimates (RE) = 2
 - (-) = 2
- Risk estimates by Tomato or Lycopene category
 - √_{GT} G. Tom = 2 (-)
 - √_{PT} P. Tom = 0
 - √_{FT} F. Tom = 0
 - √_{Lyco} Lyco = 0

Table: Relationship between Tomato/Tomato-based foods and Risk for Pancreatic Cancer

Study Type	N= studies	NEGATIVE ASSOCIATION (protective)					NEUTRAL ASSOCIATION (no associated risk or benefit)					POSTIVE ASSOCIATION (risk factor)				
		Sample size, n=					Sample size, n=					Sample size, n=				
Pancreatic		≤100	101-200	201-500	501-1000	≥1000	≤100	101-200	201-500	501-1000	≥1000	≤100	101-200	201-500	501-1000	≥1000
RCT	0															
Interv	0															
PC	0															
CC	2		√ _{GT}	√ _{GT}												
Cross Sec	0															
Eco	0															

Prostate Cancer- main findings

- Data support a protective relationship between the intake of tomato-based foods and prostate cancer risk.
- The data also suggest that processed tomato intake may be the most beneficial in this protection compared to alternative categories of tomato intake (general or fresh).

Summary of studies and outcomes

- Number of studies = 27
- Risk estimates (RE) = 35
 - (-) = 24
 - N = 9
 - (+) = 2
- Risk estimates by Tomato or Lycopene category
 - √_{GT} G. Tom = 9 (-), 5 (N), 1 (+)
 - √_{PT} P. Tom = 10 (-), 3 (N)
 - √_{FT} F. Tom = 1 (-), 0 (N), 1 (+)
 - √_{Lyco} Lyco = 4 (-), 1 (N)

Table: Relationship between Tomato/Tomato-based foods and Risk for Prostate Cancer

Study Type	N= studies	NEGATIVE ASSOCIATION (protective)					NEUTRAL ASSOCIATION (no associated risk or benefit)					POSTIVE ASSOCIATION (risk factor)				
		Sample size, n=					Sample size, n=					Sample size, n=				
Prostate		≤100	101-200	201-500	501-1000	≥1000	≤100	101-200	201-500	501-1000	≥1000	≤100	101-200	201-500	501-1000	≥1000
RCT	3	√ _{PT} √ _{GT}					√ _{PT}									
Interv	3	√ _{PT} √ _{PT}														
PC	7		√ _{GT}		√ _{GT} √ _{PT} √ _{Lyc}	√ _{PT} √ _{PT} √ _{PT}	√ _{PT}			√ _{GT} # √ _{Lyc} #					√ _{FT}	
CC	13		√ _{GT} √ _{GT} √ _{PT} √ _{Lyc}	√ _{PT} √ _{Lyc} √ _{FT}	√ _{GT} √ _{GT}		√ _{GT}		√ _{GT}	√ _{GT} √ _{GT} √ _{PT}				√ _{GT}		
Cross Sec	0															
Eco	1					√ _{GT}										

*, ^, ~, #, etc. RE with same symbol indicate same study.

Renal Cancer- main findings

- 1 CC study (n=335 cases, 1:1); (-) / protective findings

Urothelial Cancer- main findings

- Data support a neutral relationship between the intake of tomatoes and urothelial cancer risk.
- 1 PC study; Neutral findings

Summary of studies and outcomes

- Number of studies = 1
- Risk estimates (RE) = 1
 - N = 1
- Risk estimates by Tomato or Lycopene category
 - √_{GT} G. Tom = 1 (N)
 - √_{PT} P. Tom = 0
 - √_{FT} F. Tom = 0
 - √_{Lyc} Lyco = 0