

# CANCER

## Plasma/Serum Lycopene and Disease Risk

### Bladder Cancer- main findings

- Data support a neutral relationship between serum lycopene and bladder cancer
- 1 CC study (n=242 cases, CC 1:1)
- RE: N

### Breast Cancer- main findings

- Data support a neutral relationship between serum lycopene concentrations and breast cancer risk.
- The positive (risk) findings require further investigation.

### Summary of studies and outcomes

- Number of studies = 15
- Risk estimates (RE) = 15 (-) = 7
  - N = 7
  - (+) = 1

**Table: Relationship between plasma/serum Lycopene 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	0															
PC	1											√				
CC	13	√	√	√√	√		√√	√	√√	√√						
Cross Sec	1		√													
Eco	0															

√ Relationship between serum lycopene concentrations and Breast cancer.

### Cervical Cancer- main findings

- Data support a neutral, although potentially protective, relationship between serum lycopene concentrations and cervical cancer risk.

### Summary of studies and outcomes

- Number of studies = 15
- Risk estimates (RE) = 15
  - (-) = 8

- N = 7

**Table: Relationship between plasma/serum Lycopene and Risk for Cervical 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=				
Cervical		≤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	2		√	√ <sup>?</sup>												
CC	11		√√	√√	√		√√√√	√	√							
Cross Sec	2		√					√								
Eco	0															

√ Relationship between serum lycopene concentrations and Cervical cancer.

√<sup>?</sup> Identified cases not reported in abstract. Default range assigned until confirmed in publication.

## Colorectal Cancer- main findings

- Data suggest a protective association between serum lycopene concentrations and colorectal cancer; however, the data are extremely limited, based on number and quality of investigations.

### Summary of studies and outcomes

- Number of studies = 4
- Risk estimates (RE) = 4
  - (-) = 3
  - N = 1

**Table: Relationship between plasma/serum Lycopene 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	0															
Interv	0															
PC	1		√													
CC	3	√*	√				√									
Cross Sec	0															
Eco	0															

√ Relationship between serum lycopene concentrations and Colorectal cancer.

√\* n=18, Risk estimate not reported. T-test between cases/controls.

### Endometrial Cancer- main findings

- 1 study reported.
  - CC: 28 cases and 140 controls
  - RE: (-)

### Gastric/Upper GI Cancer- main findings

- Data support a neutral relationship between serum lycopene concentrations and gastric/upper GI cancer.

### Summary of studies and outcomes

- Number of studies = 6
- Risk estimates (RE) = 6
  - (-) = 2
  - N = 4

**Table: Relationship between Plasma/serum Lycopene and Risk for Gastric or Upper GI 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/oral/ (Upper GI)		≤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		√*				√√			√						
Cross Sec	1		√													
Eco	1										√					

√ Relationship between serum lycopene concentrations and Gastric/upper GI cancer.

√\* Modest (-) relationship

## Head and Neck Cancer- main findings

- Data support a neutral relationship between serum lycopene concentrations and head and neck cancer.

### Summary of studies and outcomes

- Number of studies = 3
- Risk estimates (RE) = 3
  - (-) = 1
  - N = 2

**Table: Relationship between Plasma/serum Lycopene and Risk for Head and Neck 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=				
Head, Neck		≤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	1						√									
Cross Sec	2	√					√									
Eco	0															

√ Relationship between serum lycopene concentrations and head and neck cancer.

## Lung Cancer- main findings

- Data support a neutral relationship between serum lycopene concentrations and lung cancer.

### Summary of studies and outcomes

- Number of studies = 5
- Risk estimates (RE) = 5
  - N = 4
  - (-) = 1

**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 suggest a neutral relationship between serum lycopene concentrations and ovarian cancer.
  - 2 Case-control studies reported
  - Number of cases (n= ≤ 100)

#### Summary of studies and outcomes

- Number of studies = 2
- Risk estimates (RE) = 2
  - (-) = 1
  - N = 1

### Pancreatic Cancer- main findings

- Data are inconclusive.
  - CC = 1, PC = 1
  - Number of cases (n= ≤ 100) and > 1000, respectively

#### Summary of studies and outcomes

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

### Cancer Mortality - main findings

- Data are inconclusive.
  - CS, NHANES (n=13,293)

## Summary of studies and outcomes

- Number of studies = 1
- Risk estimate
  - (RE) = 1
  - (N) = 1 25

## Prostate Cancer- main findings

- Data support a neutral, although potentially protective, relationship between serum lycopene concentrations and prostate cancer risk.
- Genetic / SNP relationship with serum lycopene and (-) aggressive prostate cancer risk.

## Summary of studies and outcomes

- Number of studies = 20
- Risk estimates = 25
  - (-) = 12
  - N = 12
  - (+) = 1

**Table: Relationship between Plasma/serum Lycopene and Risk of 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	0															
Interv	0															
PC	2	√ <sup>#</sup>					√ <sup>#</sup>	√								
CC	17	√ √	√ <sup>#</sup> √ <sup>#</sup>	√ <sup>#</sup> √ <sup>#</sup>	√ √ √	√	√	√ √ <sup>#</sup>	√ <sup>#</sup> √ <sup>#</sup> √ <sup>#</sup>	√	√					
Cross Sec	1															√
Eco	0															

√ Relationship between serum lycopene concentrations and Prostate cancer.

√<sup>#</sup> Indicates that some endpoint studied were neutral in outcome while others showed improvement and a possible reduction in disease risk.