# "Endogenous Sex Hormones and Colorectal Cancer Risk: A Systematic Review and Meta-Analysis"

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# Background

To investigate the associations between endogenous concentrations of sex hormones and colorectal cancer (CRC) risk.

# Methods

- Elsevier's MEDLINE-PubMed and Scopus databases were searched up to June 17<sup>th</sup> 2020
- prospective studies, Only focusing on

Figure 2. Forest plots of sex hormones and CRC risk.

#### **1. TESTOSTERONE**

A. Men (per 100 ng/dL)



- endogenous sex hormones, namely plasma testosterone, estradiol, and sex-hormone binding globulin (SHBG) were included.
- Generalized least-square regression was used to express the study-specific estimates on a continuous scale.
- Inverse variance random effects DerSimonian-Laird meta-analysis (MA) was applied to pool study-specific estimates.
- Heterogeneity was evaluated using the l<sup>2</sup> metric.

### Results

- Eight studies were eligible (Figure 1).
- Studies included on average 295 cases (range: 48-732) and 2,105 controls.

#### B. Women (per 10 ng/dL)

Study	TE s	eTE	R	isk Rati	o	RR	95%-CI	Weight (fixed)	Weight (random)
Orsted, D. D., 2014	-0.03 0.0	0402				0.98	[0.90; 1.06]	67.1%	43.9%
Mori, N., 2019	0.17 0.0	0827		- 18		1.19	[1.01; 1.39]	15.8%	27.6%
Lin, J. H., 2013	0.09 0.0	0797		-		1.09	[0.94; 1.28]	17.1%	28.6%
Fixed effect model				<b>A</b>		1.03	[0.96; 1.09]	100.0%	
Random effects mod	el			¢.		1.06	[0.94; 1.20]		100.0%
Prediction interval		-				-	[0.28; 4.06]		
Heterogeneity: $I^2 = 62\%$ ,	$\tau^2 = 0.0072$ ,	p = 0.07	3	1	1				
			0.5	1	2				

#### 2. ESTRADIOL

#### A. Men (per 10 pg/mL)

Study	TE seTE	<b>Risk Ratio</b>	RR	95%-CI	(fixed)	(random)
Chan, Y. X., 2018	0.14 0.1712		1.15	[0.82; 1.61]	9.2%	9.2%
Chan, Y. X., 2017	0.12 0.1162		1.13	[0.90; 1.42]	20.0%	20.0%
Lin, J. H., 2013	0.01 0.0618	11	1.01	[0.90; 1.14]	70.8%	70.8%
Fixed effect model		$\Leftrightarrow$	1.05	[0.95; 1.16]	100.0%	
Random effects mod	del	$\Leftrightarrow$	1.05	[0.95; 1.16]		100.0%
Prediction interval				[0.54; 2.03]		
Heterogeneity: $I^2 = 0\%$ ,	$\tau^2 = 0, p = 0.61$					
	0.5	1	2			

#### B. Women (per 10 pg/mL)

 No association was observed for testosterone, estradiol and SHBG in neither men nor women, with evidence for heterogeneity observed only in women (Figure 2).

#### **Figure 1.** Flow-chart of study selection.





Study	TE	seTE	Risk Ratio	RR	95%-CI	(fixed)	(random)
Chan, Y. X., 2018	0.08	0.1308	- <u>{</u> ]=	1.09	[0.84; 1.41]	8.1%	13.8%
Chan, Y. X., 2017	-0.02	0.0554		0.98	[0.88; 1.09]	44.9%	42.7%
Lin, J. H., 2013	-0.14	0.0542		0.87	[0.79; 0.97]	47.0%	43.5%
Fixed effect model				0.93	[0.87; 1.01]	100.0%	
Random effects mo	del		$\Leftrightarrow$	0.94	[0.85; 1.05]		100.0%
Prediction interval				-	[0.34; 2.63]		
Heterogeneity: $I^2 = 43\%$	$6, \tau^2 = 0.003$	37, p = 0.17	1	1	12.1 25 1.25		
	aturo antratte	0.5	1	2			

### Conclusions

Findings from this MA do not support associations of pre-diagnostic concentrations of testosterone, estradiol and SHBG with incident CRC in men or post-menopausal women.



Partners in cancer research

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