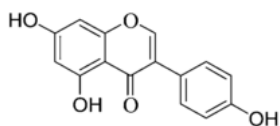


Polyphenol consumption and gastric cancer: a systematic review with meta-analysis



Introduction

Phenolic compounds are the most abundant antioxidants in the diet and may have a protective effect on risk in several types of cancer, including Gastric Cancer (GC). There are about eight thousand phenols, but the study of polyphenols in GC focuses on one or two subclasses, and their association is controversial (NIEDZWIECKI et al. 2016; TRESSERRA-RIMBAU, LAMUELA-RAVENTOS, MORENO, 2018; VITELLI-STORELLI et al. 2020). We used a systematic review followed by a meta-analysis to assess the association between polyphenol intake (total and its main classes) with GC.

Methods

This is a systematic review with meta-analysis, registered on the PROSPERO platform (CRD42022306014). The databases explored were PUBMED, Embase, Scopus, Lilacs, Web of Science and Open grey, case-control and cohort studies published between 1999 and March 2022, without language restrictions were selected, and which analyzed the association of subclass of polyphenols and the GC. Duplicate articles were excluded by the Rayyan software. Two independent researchers performed double-blind checking and data extraction from eligible articles. In the present study, random effects models were used, and publication bias was evaluated using the Egger test.

Table 1: Analysis of the association between polyphenol intake and GC among the subgroups studied.

Subgroup	Number of participants	Number of studies	RR (95% CI)	Heterogeneity test I ² (%)	p
All studies	1.197,857	19	0.71 (0.62-0.81)*	60.5	<0.001
Study design					
Cohort	1.171,647	7	0.88 (0.69-1.12)	54.7	0.039
Case-control	26,210	12	0.64 (0.56-0.74)*	44.4	0.049
Sex ¹					
Male	264,991	8	0.79 (0.67-0.94)*	31.6	0.176
Female	399,416	7	0.65 (0.48-0.87)*	49.7	0.064
Geographic area					
Asia	118,717	5	0.67 (0.51-0.89)*	60.7	0.038
America	470,985	3	0.87 (0.56-1.36)	78.3	0.010
Europe	608,155	11	0.67 (0.57-0.79)*	44.2	0.056

Note: 1 We considered the total number of studies that analyzed the specific variable. * Showed statistical significance.

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Results

Our final sample was 19 articles (Prisma, Figure 1). In the subgroup analysis (Table 1), a 36% lower risk of GC was found in case-control studies, while in cohorts there was no association. For sex, the risks were reduced in men RR=0.79 (CI 95% 0.67-0.94) and in women RR=0.65 (CI 95% 0.48-0.87), with P of 31.6% and 49.7%, respectively. In the Asian and European populations, there was a risk reduction of 23% RR=0.67 (95% CI 0.51-0.89; 95% CI 0.57-0.79), in the American 13% RR=0.87 (95% CI 0.56-1.36). In this meta-analysis, consumption of polyphenols reduced the risk of GC by 29% (RR=0.71; 95% CI 0.62-0.81) P=60.5% m (Figure 2). There was no publication bias (p=0.316).

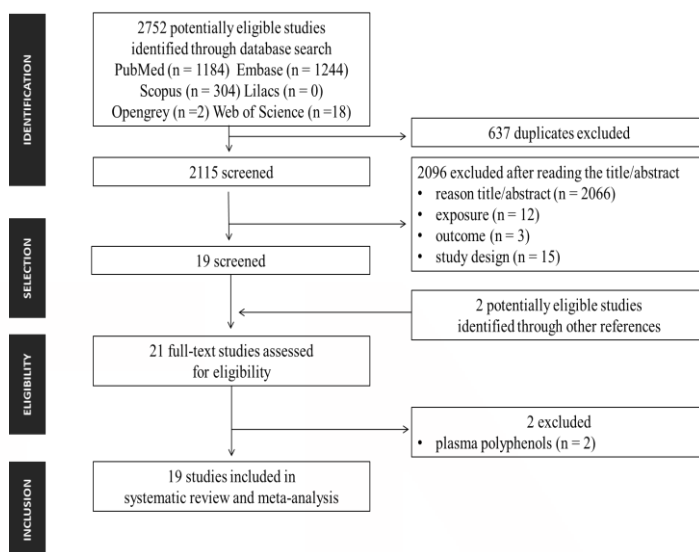


Figure 1: Study selection and inclusion process.

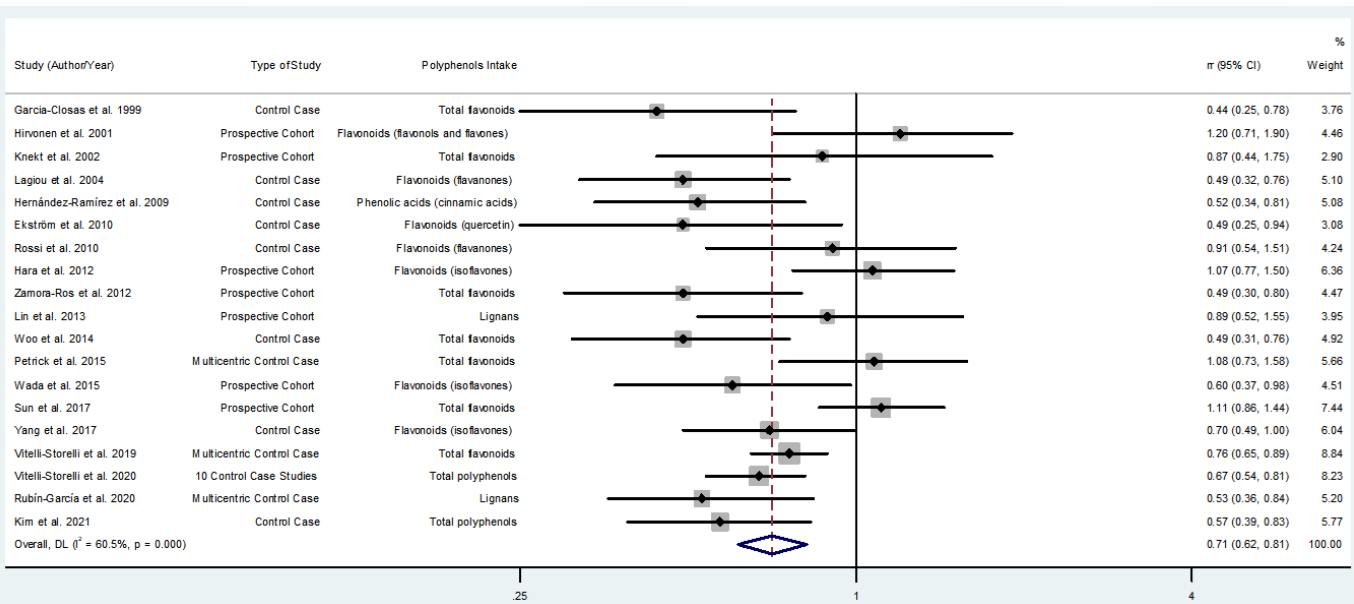


Figure 2: Association of consumption of polyphenols with the risk of gastric cancer. The square boxes represent study-specific estimates. The markers vary in size according to the weight assigned to each study, the size of each box reflects the study's weight in the analysis, and the horizontal lines represent 95% CIs. Diamonds show the pooled effect. r=relative risk.

Conclusion

This review analyzed the association considering the total of polyphenols and their main classes with the GC. It was observed that consumption of polyphenols decreased the risk of GC. The reduction was greater in females and in case-control studies. Most of the studies were carried out in Europe and Asia. It is necessary to evaluate the consumption of polyphenols and their subclasses in Latin America.

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