

## Warfarine and supplements interactions: a systematic review

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### INTRODUCTION & AIM

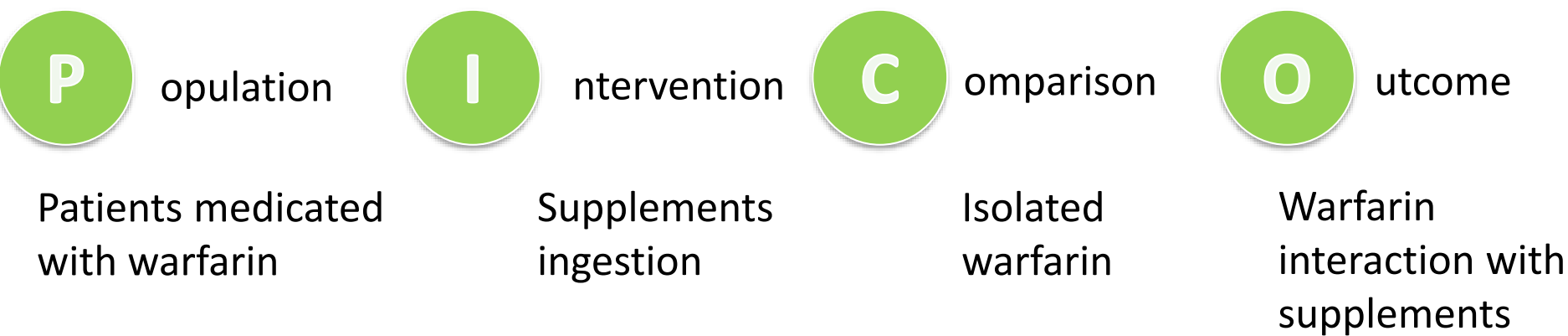
Dietary supplements are concentrated forms of nutrients that help maintain a diet with adequate levels of missing nutrients. They may interfere with the mechanism of action of drugs. Warfarin is an anticoagulant that is known to interact with various drugs, foods, and dietary supplements. The opportunity to conduct a study to identify dietary supplements that may interact with warfarin arose because of the significant increase in the use of dietary supplements in all age groups in recent years and the interactions of warfarin with these supplements, as well as the lack of a systematic review on this topic.

**Objective:** This study aims to investigate the potential interactions between warfarin and dietary supplements in patients concomitantly taking warfarin.

### METHOD

This study consisted of a systematic literature review based on the PRISMA2020 methodology (Page et al., 2020).

#### RESEARCH QUESTION



“What potential drug interactions may arise when food supplements are taken concomitantly with warfarin?”

#### INCLUSION CRITERIA

- Studies mentioning the interaction of warfarin with dietary supplements;
- Published in English or Portuguese;
- Study types to be included: Randomized clinical trials, nonrandomized clinical trials, and case studies.

#### EXCLUSION CRITERIA

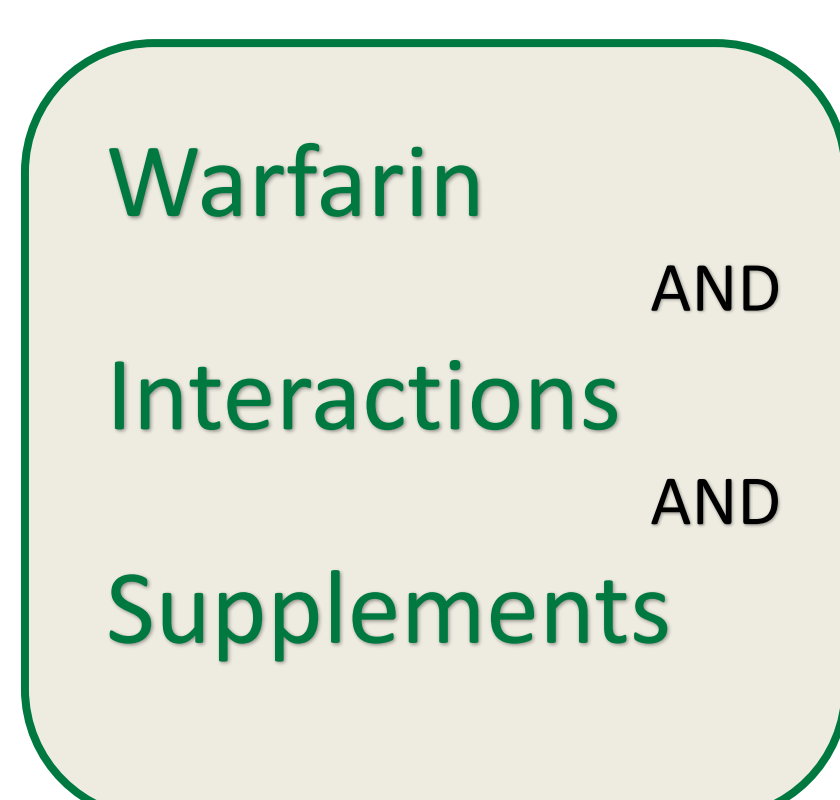
- Articles mentioning the interaction of warfarin with products other than dietary supplements;
- Study types to be excluded: *in vitro* and animal studies;

#### SEARCH STRATEGY

##### DATABASES

- Mendeley
- Pubmed
- Scielo
- ScienceDirect

##### KEYWORDS



### RESULTS & DISCUSSION

The results of the application of PRISMA2020 Methodology are represented in Figure 2.

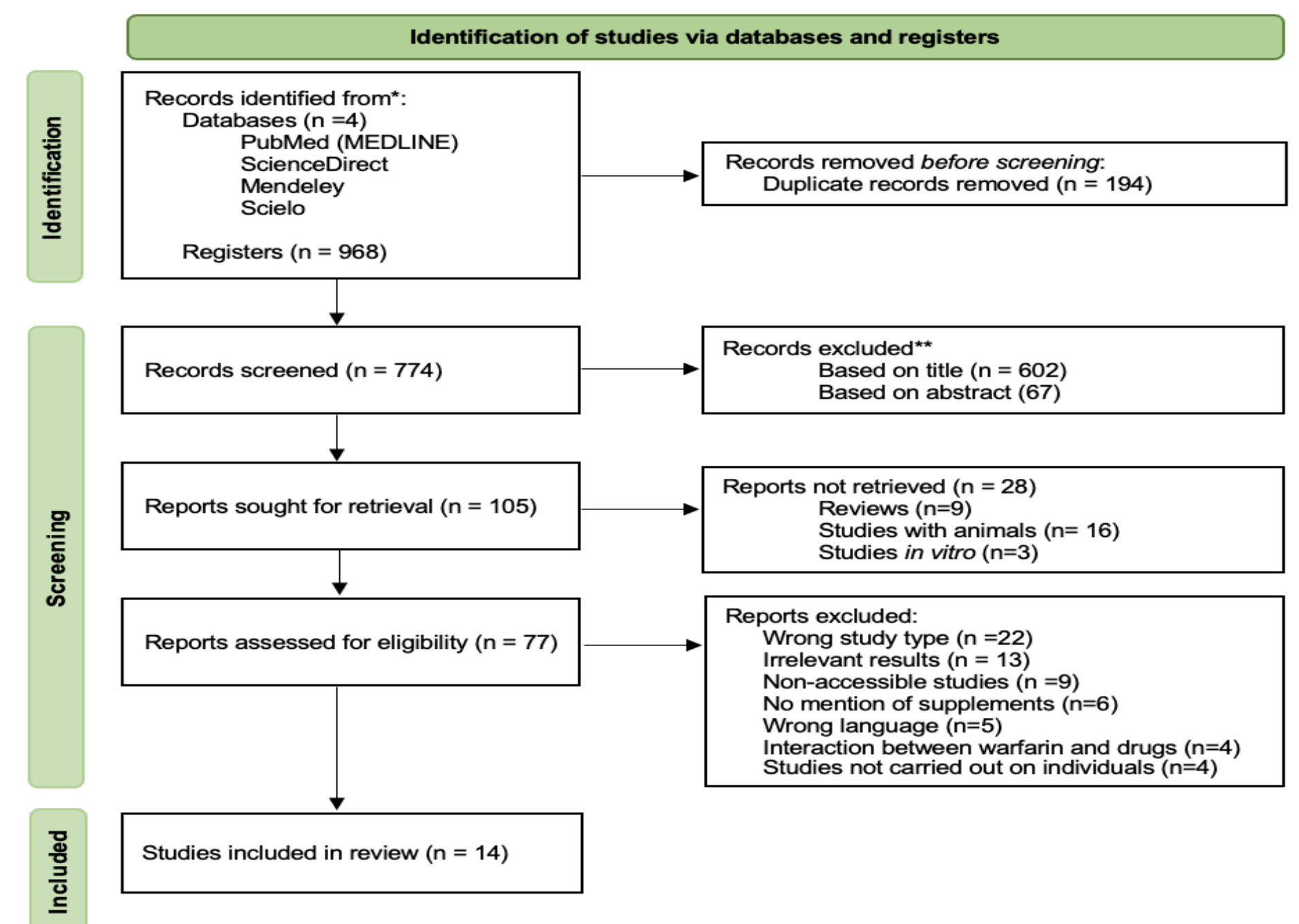


Figure 2: Flowchart of the application of the PRISMA2020 methodology showing the identification, screening and inclusion of articles.

The information retrieved in Table 2 represents the analysis of the 14 selected articles. Of the supplements analyzed, 7 (glucosamine, grapefruit, chitosan, dong quai, royal jelly, vitamin E, and milk thistle) interacted with warfarin by potentiating its effect, leading to an increase in the International Normalized Ratio (INR). Another 4 (American ginseng, vitamin K1, banana flakes, and Fortisip Compact) also interacted with warfarin, leading to a decrease in INR. Finally, 3 (fish oils, aged garlic extract and warfarin) showed no interaction.

Table 1: Warfarin interaction with supplements

Supplement	Warfarin interaction	
	YES	NO
Dong Quai	INR	
Royal jelly		
AREDS formula (Vitamin E)		
Milk thistle		
Glucosamine		
Grapefruit		
Chitosan		
Banana Flakes	INR	
American ginseng		
Fortisip Compact		
Multivitamins (Vitamin K1)		
Astaxanthin		
Fish oils		
Aged garlic extract		

Some drugs, foods, and dietary supplements interact with warfarin by altering its metabolism and ultimate effect, thereby interfering with the desired anticoagulation goal. It is therefore important that patients taking warfarin consult their doctor before changing their diet to ensure that there are no interactions.

### CONCLUSION

This work clarified the interactions between supplements and warfarin, emphasizing supplements such as dong quai, milk thistle, and American ginseng, which alter the mechanism of action of the drug. Furthermore, it is imperative for patients to seek counsel from healthcare professionals before modifying their dietary regimen. In addition, it would be beneficial to explore and use other therapeutic alternatives that have fewer interactions and can provide the same clinical outcomes. Implementation of these strategies could significantly improve treatment management and outcomes in patients requiring anticoagulation.

In order to evaluate the studies quality an artificial intelligence-based tool (GRADEpro GPT) was used.

