

Research Question

Do polyphenols in wine aid in the prevention of caries?

Abstract

Recently, studies have explored how biologically active compounds in wine benefit human teeth. Dietary polyphenols, in particular wine polyphenols, seem to balance the composition of the oral microbiota, thus leading to potentially more effective anti-cariogenic effects on the individual.

Recent research has discussed the main action mechanisms of polyphenols against oral microbial diseases and highlighted the antiadhesive capacity of caffeic and p-coumaric acids as well as grape seed and red wine extracts. It has been found that polyphenols increased their inhibition potential against *S. mutans* adhesion when combined with *S. dentisani*.¹ Other research regarding polyphenols, specifically resveratrol, discussed the anti-inflammatory effects of resveratrol and concluded that these polyphenols are effective against fighting cariogenic and periodontal disease pathogens.^{1 2 3}

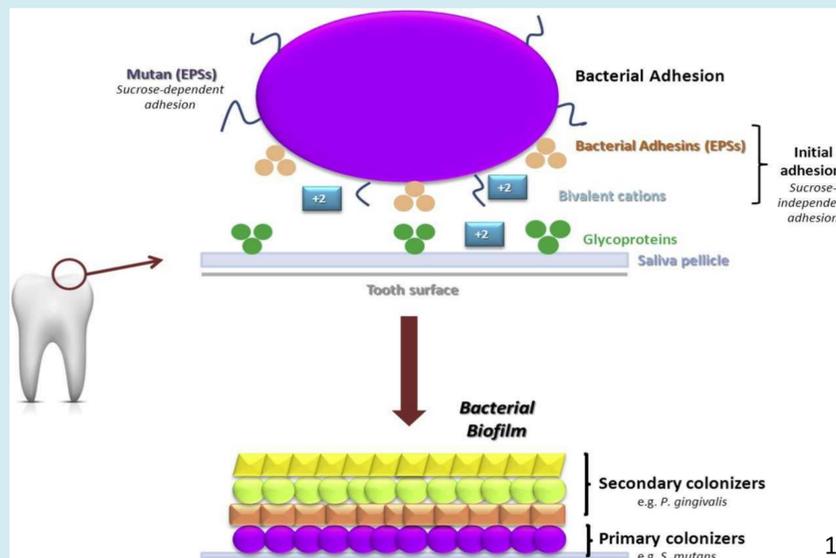
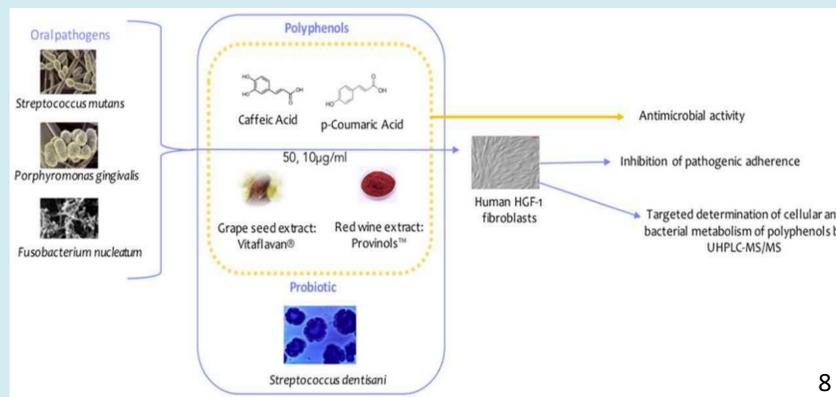
In conclusion, polyphenols in wine can have anti-cariogenic effects. Because polyphenols have antiadhesive properties and antioxidant activity, this decreases the dental plaque accumulation in the oral cavity. The antiadhesive capacity in red wine polyphenols, in addition to complementary actions of an oral probiotic *S. dentisani*, increases the inhibition potential against *S. mutans*, thus concluding that wine polyphenols have an anti-cariogenic effect and aid in the prevention of caries in the oral cavity.

Introduction

- Even though decay rates have declined, 91% of adults aged 20-64 have had caries experience.⁵
- Polyphenols are reactive metabolites that are found in plant derived foods including the grapes found in red wine.⁶
- Previous research supports the theory that polyphenols have positive effects on the heart.⁷
- New research has found that the polyphenols found in wine balance the composition of the oral microbiota which suggests plausible benefits in the prevention of not only caries, but periodontal disease as well.^{8 9}

Review of Literature

- Research has shown that the polyphenols disrupt the periodontal pathogens by antimicrobial action.^{2 4 5 7 10}
- Dietary polyphenols, specifically wine polyphenols, seem to balance the composition of the oral microbiota suggesting plausible benefits in the prevention of caries and periodontal diseases.⁴
- Recent research has examined the adhesion to human gingival fibroblasts by wine polyphenols
 - It was found that the antiadhesive capacity in selected red wine polyphenols worked against the oral pathogens *Porphyromonas gingivalis*, *Fusobacterium nucleatum*, and *Streptococcus mutans*.
 - Results highlighted the antiadhesive capacity of caffeic and p-coumaric acid where both caffeic and p-coumaric acids increased their inhibition potential against *S. mutans* adhesion.⁵
- Additionally, studies have shown that polyphenols in conjunction with the oral probiotic *S. dentisani* increased the potential inhibition against *S. mutans* in caries free individuals.^{5, 10}



Discussion

All research findings noted in this poster came to the conclusion that red wine had powerful polyphenols that could help aid in the prevention of caries and periodontal disease. However, it is important to note that wine may not have the same effects on every individual's oral health. Factors such as genetic predisposition and daily dietary habits could potentially play a key role in how an individual forms caries, so there is still much to be explored and discovered in this area of research. It is also important to note that wine is a significant CNS depressant and if consumed in excess could lead to potential health risks such as liver disease and pancreatitis.¹⁰ Like with anything, in order to get the positive anti-cariogenic effects from drinking red wine it is important not to consume in excess and instead consume in moderation so as not to negatively affect any other areas of the body.

Conclusion

Research and knowledge on the benefits of polyphenols in their relation to the prevention of dental caries and periodontal disease is in the very early stages. Recent findings noted in the research explored here all suggest that certain foods and drinks that are rich in polyphenols can lead to the prevention of dental disease and promote oral health.⁸ While these studies have shown that polyphenols have promising evidence to support their antiadhesive and anti-cariogenic effects, additional research is needed. Additionally, it appears that polyphenols in wine work against *S. mutans* adhesion, however, more research must be done to support the conclusion that polyphenols, specifically wine polyphenols, are the best resolution against oral pathogens.

References

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