Antimicrobial Effects of Fruit and Flower Anthocyanins

M.J. Smelt¹, S.S. Parotte¹, E. Lubbers¹, J. Wever¹, X.Y. Wu¹, E. Onrust¹, H.E. Hoekstra¹, L.M. Sikkema¹, D.A. Wieleman¹, D.J. Binnema¹, E. Sibbald-Tsompanidou², H.J.M. Harmsen², J. Hageman¹ 1Hanze University of Applied Science, Life Science & Technology, Groningen, ²University Medical Center Groningen, Groningen

Conclusion

• Our research suggest that anthocyanins are promising anti-bacterial agents
• The antimicrobial effects are highly dependent on the source of the anthocyanin-extract
• Rose-anthocyanins appear to posses the strongest anti-bacterial effects
• Gram-positive strains appear to be more sensitive compared to gram-negative strains
• Future research efforts should focus on different anthocyanin entities

Aim: Determine the antimicrobial activity of different anthocyanins

Background

• The rise of antibiotic-resistance is a worldwide issue
• Anthocyanins may possibly be the antimicrobials of the future
• Anthocyanins are water-soluble pigments found in fruits and flowers of higher plant species
• More than 600 different anthocyanins are known. All are composed of an anthocyanidin core bound to different glycosidic moieties
• The anti-bacterial efficacy of the different anthocyanin entities is currently unknown

Methods

Extraction from different sources

General anthocyanin structure

Agar well diffusion  MIC-assay  HPLC

Results

Comparative antimicrobial activity of 1% grape or 0,32% rose anthocyanin extracts against S. aureus, using a twofold dilution series

Antimicrobial activity of rose anthocyanin extract against S. aureus, using the agar well diffusion test.

Comparison of HPLC separation of anthocyanins
(A) Rose anthocyanins, (B) Red cabbage anthocyanins, (C, D) Grape anthocyanins

share your talent. move the world.