

Antimicrobial effect of pomegranate extract in *Staphylococcus*, *Pseudomonas*, *Escherichia* and *Malassezia* cultures.

L Ramió-Lluch¹, S Cerrato¹, N García¹, P Brazís¹, A Puigdemont².
¹UNIVET, I+D Department, Barcelona, Spain.
²Department of Pharmacology, Therapeutics and Toxicology, Veterinary Faculty, Autonomous University of Barcelona, Barcelona, Spain.

Introduction

Active bioflavonoids of pomegranate (*Punica granatum*) have demonstrated antioxidant, anti-inflammatory and analgesic effects^{1,2}. Moreover, wound healing activity³ and hair care properties⁴ make pomegranate extracts useful for the treatment of sensitive and allergic skin.

Other polyphenols have shown antimicrobial activity against skin pathogens⁵. Due to relevance of primary and secondary infections in dog skin, a microbiological study with the most common pathogens has been suggested.

Objective

To assess the antimicrobial activity of pomegranate extract against the most common canine dermatopathogens such as *Staphylococcus pseudintermedius*, *Pseudomonas aeruginosa*, *Escherichia coli* and *Malassezia pachydermatis*.

Materials and methods

Staphylococcus pseudintermedius, *Pseudomonas aeruginosa*, *Escherichia coli* and *Malassezia pachydermatis* were obtained from skin dogs isolates, diagnosed at UNIVET.

Pomegranate extract were diluted (10, 5, 1, 0.5 and 0.1%, w/v) and pH were adjusted at 5.5. Sterile 6 mm discs were submerged in each solution during 5 minutes. Marbofloxacin discs for bacteria cultures or ketoconazol discs for fungal cultures were used as a positive control. Cultures were incubated at 37°C for 16-18h and inhibitory growth halos were measured with a calliper. Results were expressed as the mean of four replicates for each microorganism.



References

1 Adams LS, Seeram NP, Aggarwal BB et al. Pomegranate juice, total pomegranate ellagitannins, and punicalagin suppress inflammatory cell signaling in colon cancer cells. J Agric Food Chem 2006; 54:980-985.

2 Shukla M, Gupta K, Rasheed Z et al. Bioavailable constituents/metabolites of pomegranate (*Punica granatum* L) preferentially inhibit COX2 activity ex vivo and IL-1beta induced PGE2 production in human chondrocytes in vitro. J Inflamm 2008; 5: 9.

3 Hayouni EA, Miled K, Boubaker S et al. Hydroalcoholic extract based-ointment from *Punica granatum* L. peels with enhanced in vivo healing potential on dermal wounds. Phytomedicine 2011; 18:976-984.

4 Ferrera M, Pahl R, Rodrigues de Castro J et al. Efficacy of *Punica granatum* L. Hydroalcoholic extract on properties of dyed hair exposed to UVA radiation. J Photochem Photobiol B 2013; 120: 142-147.

5 Taguri T, Tanaka T, Kouno I. Antimicrobial activity of 10 different plant polyphenols against bacteria causing food-borne disease. Biol Pharm Bull 2004; 27: 1965-1969.

Results



Conclusion

- Pomegranate extract showed a high dose-response antimicrobial activity against *Staphylococcus*, *Pseudomonas* and *Malassezia*, the most typical microorganisms isolated from the skin of dogs.
- No inhibitory effects were observed against *E.coli*.
- The antimicrobial effects observed in this study reinforces pomegranate usefulness as a topical treatment in both primary and secondary skin infections induced by these microorganisms.
- Pomegranate is a natural alternative to antibiotic treatments.