Letters in Applied Microbiology

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Wash your mouth out with silver
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Yeasts which cause hard-to-treat mouth infections are killed using silver nanoparticles in the laboratory, scientists have found. These yeast infections, caused by *Candida albicans* and *Candida glabrata* target the young, old and immuno-compromised. Professor Mariana Henriques, University of Minho, and her colleagues hope to test silver nanoparticles in mouthwash and dentures as a potential preventative measure against these infections.

Professor Henriques and her team, who published their research in the Society for Applied Microbiology's journal '*Letters in Applied Microbiology'* today, looked at the use of different sizes of silver nanoparticles to determine their anti-fungal properties against *Candida albicans* and *Candida glabrata.* These two yeasts cause infections including oral thrush and dental stomatitis, a painful infection affecting around seven out of ten denture wearers[1]. Infections like these are particularly difficult to treat because the microorganisms involved form biofilms[2].

The scientists used artificial biofilms in conditions which mimic those of saliva as closely as possible. They then added different sizes and concentrations of silver nanoparticles and found that different sizes of nanoparticles were equally effective at killing the yeasts. Due to the diversity of the sizes of nanoparticles demonstrating anti-fungal properties the researchers hope this will enable the nanoparticles to be used in many different applications.

Some researchers have expressed concerns around the safety of nanoparticle use but the authors stress this research is at an early stage and extensive safety trials will be carried out before any product reaches the market.

Professor Henriques comments: "*With the emergence of Candida infections which are frequently resistant to the traditional antifungal therapies, there is an increasing need for alternative approaches. So, silver nanoparticles appear to be a new potential strategy to combat these infections. As the nanoparticles are relatively stable in liquid medium they could be developed into a mouthwash solution in the near future."*

Moving forward Professor Henriques hopes to integrate silver nanoparticles into dentures which could prevent infections from taking hold.

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Further information

[1] Further information available from http://www.nhs.uk/Conditions/Oral-thrush---adults/Pages/Introduction.aspx

[2] Biofilms are communities of microrganisms which live together surrounded by an extracellular polymeric substance (a layer of slime made by the microorganisms). This makes it very difficult for medicine to penetrate the community and kill the responsible microorganisms.

Notes to Editors:

1. The article referred to is: Monteiro, D. R., Silva, S., Negri, M., Gorup, L.F., Rodrigues de Camargo, E., Oliveira, R., Barbosa, D. B. and Henriques, M, "*Silver nanoparticles: influence of stabilizing agent and diameter on antifungal activity against Candida albicans and Candida glabrata biofilms",* Letters in Applied Microbiology, Wiley-Blackwell, March 2012. DOI: 10.1111/j.1472-765X.2012.03219.x

2. To request a PDF of the full article, email Ben Norman. benorman@wiley.com

3. To arrange an interview with the authors, please contact Clare Doggett, Communications Officer [Mobile: 07807 267101; Office +44(0)1234 326661 email clare@sfam.org.uk]

4. *Letters in Applied Microbiology* is published by Wiley-Blackwell with the Society for Applied Microbiology. The journal provides for the rapid publication of short, high quality papers in the broad field of applied microbiology, including environmental, food, agricultural, medical, pharmaceutical, veterinary, taxonomy, soil, systematics, water and biodeterioration. Advances in rapid methodology are a particular feature.

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6. About the Society for Applied Microbiology (S*f*AM)

S*f*AM is the voice of Applied Microbiology within the UK. We are the oldest UK microbiology society with members worldwide. S*f*AM works in partnership with sister organisations and microbiological bodies to ensure that microbiology and microbiologists are able to exert influence on policy-makers within the UK, in Europe and worldwide. The quality of the microbiologists of the future depends on the standard of education offered, and the Society plays a leading role in working with many different organisations to educate, inform and support the training of our future microbiologists.