Effect of Natural Products on Overall Microbial Activity in Household Items

Teyaijah Givens  
*Georgia Southern University*, tg02130@georgiasouthern.edu

Nosa Lloyd Nwaonumah  
*Georgia Southern University*, nn00400@georgiasouthern.edu

Brittany Loadholt  
*Georgia Southern University*, bl01985@georgiasouthern.edu

Bushra Shah  
*Georgia Southern University*, bs06779@georgiasouthern.edu

Atin Adhikari  
*Georgia Southern University*, aadhikari@georgiasouthern.edu

Follow this and additional works at: https://digitalcommons.georgiasouthern.edu/research_symposium

Part of the [Community Health and Preventive Medicine Commons](https://digitalcommons.georgiasouthern.edu/community_health_and_preventive_medicine_commons)

**Recommended Citation**

Givens, Teyaijah; Nwaonumah, Nosa Lloyd; Loadholt, Brittany; Shah, Bushra; and Adhikari, Atin, "Effect of Natural Products on Overall Microbial Activity in Household Items" (2016). *Georgia Southern University Research Symposium*. 10.  
https://digitalcommons.georgiasouthern.edu/research_symposium/2016/2016/10

This presentation (open access) is brought to you for free and open access by the Conferences & Events at Digital Commons@Georgia Southern. It has been accepted for inclusion in Georgia Southern University Research Symposium by an authorized administrator of Digital Commons@Georgia Southern. For more information, please contact digitalcommons@georgiasouthern.edu.
Background
Indoor contamination from microorganisms is an important health hazard issue (e.g., respiratory allergy, infections, and food contamination). Particularly, growth of molds and bacteria in damp environmental conditions could be hazardous for the occupants susceptible to microbial allergens. The growing awareness concerning the adverse effects of chlorine bleach and cleaning chemicals calls for field-testing new natural ingredients with functional properties against microorganisms. Essential oils possess a wide spectrum of antimicrobial activity, which may be of great importance for controlling indoor microbial exposure.

Purpose
The objective of this study was to investigate how microbial growth in different surfaces of homes reacted to the application of natural products serving as a health harmless aid to rid the home of microorganisms.

Methods
- The natural products consisted of tea tree oil, natural vinegar, and grapefruit seed extract, which demonstrated antifungal properties in our other studies.
- To assess microbial load before and after treatment of the natural products, ATP levels were monitored.
- Each natural product was used in between pre-treatment and post-treatment swabbing of the suspected damp surfaces (toilets and windows) in home environments following a standard CDC protocol and levels of ATP in swab extracts were measured by a luminometer.

Results
Results showed a consistent 10-times decrease in the ATP analysis of the toilet after using all three natural products, although pre-treatment recordings took place above the threshold. Tea tree oil had no effect on the microorganisms on the window due to microorganisms not being sensitive to such a natural product. The increase noted in the ATP analysis containing the natural products tea tree oil and vinegar from the window could have also resulted from the sensitivity of the ATP. However, a 56% decrease was noted in the ATP analysis of the window after use of the grapefruit seed extract.

Conclusion/Recommendations
It was concluded that grapefruit seed extract had a greater inhibitory effect on household items such as the toilet and window seal. Tea tree oil had an obvious effect as well, and further testing will be performed using such. Vinegar, however, posed little to no effect at all when observing microbial activity. Therefore, the use of natural products on household items proved to be effective in inhibiting microbial activity.

http://www.easlabs.com/photo-gallery/damage-from-mold/