

Sterilization Effect of Detergents by Laundry Conditions

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I. Introduction

The market of antibacterial detergents in laundry has continued to grow. It has been advertised that antibacterial detergents can have reducing importantly microorganisms on the laundry¹. Previous reports² have paid mainly attention to the commercial laundry detergents, fabric softners and bleaches on bacterial activities. Bactericidal activities under various conditions during washing, rinsing and bleaching were evaluated in terms of minimum inhibitory concentration (MIC) by a broth dilution method. This paper is concerned with the disinfection property of new commercial laundry detergents with a low temperature activated bleaching system that have been advertised for extensive antibacterial effect. Also the difference of bacterial population reduction by two antibacterial testing methods is investigated in this paper.

II. Experimental

Antimicrobial activities of laundry detergent and bleach (Table 1) was evaluated by KS K 0693 -2001 and Shake Flask method in terms of the reduction rates in the number of colonies of *Escherichia coli*, ATCC No. 25922, *Staphylococcus aureus*, strain 209, ATCC No. 6538, and *Klebsiella pneumonia*, ATCC No. 4352.

Table 1. Specifications of Commercial Powder Detergents and Bleach

Sample code	Ingredients	Concentration (%)
DHT	Natural alcohol derived nonionic surfactant, LAS, AOS, Soap, Alkali builder, Zeolite, Percarbonate, Activator, Enzyme	0.84
DPH	Alcohol derived nonionic surfactant, LAS, AOS, Anionic fatty acid series, Oxygen bleaching agent, Alkali builder, Enzyme	0.83
NBT	Alcohol derived nonionic surfactant, AOS, LAS, Anionic fatty acid series	0.67
DOX	Sodium percarbonate	0.1

III. Results and Conclusions

1. Bactericidal Effect of Samples by Shake Flask Method

DHT and DPH are showed disinfection effect for the three bacterial strains in higher concentration than amount specified by the respective companies. NBT has a limited effect on the degree of bacterial population reduction. POX is showed disinfection effect for two bacterial strains except *S. aureus*.

2. Bactericidal Effect of Samples by KS K 0693

DHT is showed disinfection effect for *K. pneumonia* and *S. aureus* in standard concentration by the respective company. DPH and NBT have a bactericidal effect for only *S. aureus*. POX is showed disinfection effect for *K. pneumonia* and *S. aureus* except *E. coli*.

Two antibacterial testing methods did affect differently about a maximum removal of the bacterial strains on the same detergents and bleach. As compared to a reduction of the bacterial population by the testing methods for DHT and DPH, KS K 0693 method has higher disinfection effect than Shake flask method in washing time and concentration.

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References

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