

EFFECTS OF POTASSIUM SORBATE SINGLY AND IN COMBINATION
WITH BUTYL HYDROXYANISOLE, TERTIARY BUTYLHYDROQUINONE
AND PROPYL GALLATE ON THE GROWTH OF
STAPHYLOCOCCUS AUREUS S-6 AND SALMONELLA SENFTENBERG

by

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TABLE OF CONTENTS

	Page
INTRODUCTION	1
LITERATURE REVIEW	2
Sorbates	2
Antioxidants	6
Sorbates in Combination with Other Compounds	8
Safety of Sorbates	9
MATERIALS AND METHODS	10
Test Organisms and Media	10
Potassium Sorbate Solutions and Media	11
Antioxidant Solutions and Media	11
Growth Inhibition Studies in Media	11
Growth Inhibition Studies in Fresh Ground Beef	12
RESULTS AND DISCUSSION	16
Effect of Potassium Sorbate Alone	16
Effect of Antioxidants	16
Effect of Combinations of Potassium Sorbate, BHA, TBHQ and PG in Media	20
Growth Inhibition Studies in Fresh Ground Beef	31
CONCLUSION	40
REFERENCES	41
ACKNOWLEDGEMENTS	45
APPENDIX	46

LIST OF TABLES

	Page
Table 1. Composition of Ground Beef	14

LIST OF FIGURES

	Page
Figure 1 -- Effect of potassium sorbate on growth of <u>Salmonella senftenberg</u> in tryptic soy broth (pH 5.5) at 37°C.	17
Figure 2 -- Effect of potassium sorbate on growth of <u>Staphylococcus aureus</u> S-6 in tryptic soy broth (pH 5.5) at 37°C.	18
Figure 3 -- Levels of TBHQ, BHA and PG found to delay or inhibit growth of <u>Salmonella senftenberg</u> in tryptic soy broth (pH 5.5) at 37°C.	19
Figure 4 -- Levels of TBHQ, BHA and PG found to delay or inhibit growth of <u>Staphylococcus aureus</u> S-6 in tryptic soy broth (pH 5.5) at 37°C.	21
Figure 5 -- Effect of potassium sorbate and BHA on growth of <u>Salmonella senftenberg</u> in tryptic soy broth (pH 5.5) at 37°C.	23
Figure 6 -- Effect of potassium sorbate and TBHQ on growth of <u>Salmonella senftenberg</u> in tryptic soy broth (pH 5.5) at 37°C.	24
Figure 7 -- Effect of potassium sorbate and PG on growth of <u>Salmonella senftenberg</u> in tryptic soy broth (pH 5.5) at 37°C.	25
Figure 8 -- Effect of potassium sorbate and BHA on growth of <u>Staphylococcus aureus</u> S-6 in tryptic soy broth (pH 5.5) at 37°C.	27
Figure 9 -- Effect of potassium sorbate and TBHQ on growth of <u>Staphylococcus aureus</u> S-6 in tryptic soy broth (pH 5.5) at 37°C.	28
Figure 10 -- Effect of potassium sorbate and PG on growth of <u>Staphylococcus aureus</u> S-6 in tryptic soy broth (pH 5.5) at 37°C.	29
Figure 11 -- Effect of potassium sorbate, combined with TBHQ, BHA and PG, on growth of <u>Salmonella senftenberg</u> in fresh ground beef	33
Figure 12 -- Effect of potassium sorbate, combined with TBHQ, BHA and PG, on growth of <u>Staphylococcus aureus</u> S-6 in fresh ground beef.	34

LIST OF FIGURES (continued)

	Page
Figure 13 -- Effect of potassium sorbate on growth of <u>Salmonella senftenberg</u> in fresh ground beef at 30°C.	37
Figure 14 -- Effect of potassium sorbate on growth of <u>Staphylococcus aureus</u> S-6 in fresh ground beef at 30°C	39

INTRODUCTION

Since the early 1950's, sorbic acid and the potassium salt, potassium sorbate, have been widely used as effective antimycotic agents in various commercially prepared foods (Luck, 1976). More recently, sorbic acid and potassium sorbate have been studied for their antimicrobial activity against various food-borne illness and food spoilage bacteria. Antioxidants such as butylated hydroxyanisole (BHA), tertiary butylhydroquinone (TBHQ), and propyl gallate (PG), commonly used to prevent rancidity in lipids and lipid-containing products, also possess antimicrobial properties against microorganisms. Recent studies using the combination of potassium sorbate and BHA or TBHQ have shown a synergistic antimicrobial effect against Staphylococcus aureus, Clostridium perfringens and Salmonella typhimurium in culture media. Due to the complex and varied systems that make up a food, the results of inhibition studies in a defined system of the agar or broth medium cannot be extrapolated directly to a food system. To date, no study has been reported that determines the effectiveness of potassium sorbate/antioxidant combinations in a food system. Also, the effects of a fairly substantial lipid content of a food on the antimicrobial effectiveness of the antioxidants have not been studied.

The objectives of the study reported here were to determine:
(1) the effects of potassium sorbate singly and in combination with butyl hydroxyanisole, tertiary butylhydroquinone and propyl gallate on the growth of Staphylococcus aureus S-6 and Salmonella senftenberg in broth culture media at 37°C; (2) the effectiveness of potassium sorbate/antioxidant combinations, determined to be the most antimicrobial in broth