

ABSTRACT

THESIS: Effect of co-culturing *Streptomyces griseus* with selected industrial microbes to optimize antibiotic yields

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The increasing emergence of antibiotic resistant strains of bacteria and fungi is driving the need to increase the production of current antibiotics and produce novel antimicrobial compounds. This study worked to increase the production of cycloheximide and streptomycin antibiotics by co-culturing *Streptomyces griseus* with other industrially important microbes. 1-3 industrial challenge microbes at a time were added to a culture of *S. griseus* and allowed to grow for one week in shake flask cultures before harvesting and quantifying antibiotic production. Fifteen different industrial challenge microbes placed in 35 different combinations were used in the study and 17 of these combinations were found to significantly increase antibiotic production after analysis with ANOVA. Antibiotic production was confirmed using bioautograms. Three of the successful different co-cultures were then subjected to a study to see when industrial challenge microbe addition was optimal. Results suggest that the optimal time to add the challenge microbes was 1-3 days following the original *S. griseus* inoculation. Dead challenge microbes were also added to a culture of *S. griseus* and it was found that these significantly increased cycloheximide as much as the live co-cultures did.