

Bioactivity auantification of a novel antimicrobial peptide by agar diffusion bioassay

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Abstract:

Recently, antimicrobial peptides (AMP) produced by bacteria, called bacteriocins, have attracted a great deal of attention as biopreservatives in the application of agri-food industry. Extensive industrial uses and research studies require an accurate and precise method for the quantification of novel AMP in food samples, fermentation broth and other media. In this work, an agar diffusion bioassay was developed for the rapid, accurate and precise quantification of a novel AMP produced by *Brevibacillus laterosporus*. The pre-diffusion step resulted in larger inhibition zones and more precise results, and the best combination was the method using *Staphylococcus aureus* as an indicator strain with pre-diffusion at 4 °C for 12 h. To determine the activity units per millilitre of unknown bacteriocin (AU/ml), serial dilutions of the filter-sterilized supernatant were performed. The relationship between the bacteriocin concentration and the resulting zone of inhibition was demonstrated and a high correlation coefficient ($R^2=0.9886$) was obtained. This method may be also applied for the quantification of unknown bacteriocin.

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