Method of quantitative antimicrobial activity measurement of antimicrobial substances

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As a method of measuring the concentration of bacteria, a spectrophotometer measurement method and a plate counting method are used. However, the spectrophotometer measurement method is not suitable for measuring the concentration of living cells because it measures the number of dead cells as a method using the increase in turbidity of the culture medium as the number of cells increases. Therefore, the plate counting method is used to measure live cell. The plate counting method is a method of counting the number of colonies formed by the proliferation of a strain. However, this method has a limitation in that it requires the use of a low concentration strain suspension for quantitative measurement. In this study, we proposed a measurement method using Image J for effective quantitative measurement of high-concentration bacteria. In addition, we intended to quantitatively measure the antibacterial activity of the antimicrobial film through the Image J measurement method. For quantitative measurement of high-concentration bacteria, strains of 101, 104, and 107 CFU/mL were smeared on eosin methylene blue ager (EMB) medium, and RSM of the antimicrobial films were performed using the Image J program. For the treatment method using Image J, only the medium was selected as the oval type, and the petri dish side and background were removed as a clear outside type. The green color was then separated through a split channel type and measured the area where the bacteria grew. As a result, the area of bacteria could be measured using Image J, and colonies and non-colonies could be distinguished and quantitatively measured. It was confirmed that the higher the concentration of the antimicrobial substance in the antimicrobial film, the better the antimicrobial activity, and there was no difference according to the incubation time. Through this study, it was confirmed that high concentration of bacteria can be quantitatively measured by measuring the area ratio where colonies are formed, and it was confirmed that the antimicrobial activity of antimicrobial substance can be quantitatively measured.