Algoritm olah citra digital penghitung koloni bakteri sebagai pengembangan total plate count = Algorithm of Digital Image Processing for Counting Bacterial Colonies as an Improvement of Total Plate Count.

Subhan Pradana, author

Abstrak

Counting bacteria colonies uses Total Plate Count (TPC) method which is generally done by seeing, counting, naked eyes and time consuming. The aim of research is to make an image processing algorithm that is able to count the total bacteria colonies on the TPC method which is can be applied without any special equipment, and to provide informations about the best configuration in its application. This research was done by making an image processing algorithm based on gray-scale image segmentation, using MATLAB, and testing its accuracy in counting bacteria colonies. The result showed that the optimal threshold value for black background is between 0.67 and 0.79, and the optimal threshold value for white background was between 0.01 and 0.09. This experiment revealed that low value o f disk shape morphological structuring element could give the optimal detection of bacteria colonies. In conclutions, the total numbers of bacteria colonies which was counted by gray-scale image segmentation which one of image processing algorithm method was not statistically different compared to manual counting. Automation is one side o f technology that can help human doing something with easiness and simplicity. Digital image processing is one kind o f automation. Counting bacteria colonies using Total Plate Count (TPC) commonly done by counting bacteria colonies manually, it was very time consuming. The aim of this research is to make an image processing algorithm that able to count total bacteria colonies on the TPC method which can be applied without require special equipment, and to provide information about best configuration in its application. This research was done by making an image processing algorithm based on color image segmentation using MATLAB, and testing its accuracy in counting bacteria colonies. The results showed that the total numbers of bacteria colonies as the result o f counting by image processing algorithm based on color image segmentation were not different statistically compared to manual counting. A good detection o f bacteria colonies was depends on the configuration o f some parameters, such as color sampling, value o f color tolerance, shape and value o f morphological structuring element.