ABSTRACT

Probiotics are foods that contain live lactic acid bacteria that actively promote health by regulating the balance of microorganism in disgestive tract.. Source of probiotics can be obtained from the probiotic beverages on the market. However, these beverages are not always free from contamination. Probiotic drinks can be contaminated by pathogenic microorganisms that can harm human health. This far, detection is only performed by researchers within manual method, which is by counting the number of bacteria based on the planting material within a certain amount and diluting the common media for bacteria.

This final project aims to generate an application system that able to detect bacterial contaminants in contamined probiotic beverages. Bacterial contaminats detection process consists of several processes. Detection process starts with initial probiotic beverages image processing by removing unnecessary information on image processing. Next process is to use characteristic extraction methods: Emphirical Mode Decompotition (EMD) and Principal Component Analysis (PCA) to generate characteristic vector from training images.

Processing starts from data acquisition, image processing and testing. The method for image processing is Emphirical Mode Decomposition (EMD). After the simulation, it is said that the program is good enough to detect bacterial contaminants with accuracy of 94,16% with EMD 1th level, image size 600 x 600 pixel, and principal component value is 100%.

Keywords: probiotic, EMD, PCA, matlab