

APPLICATION OF THRESHOLDING ALGORITHMS IN BLUE CHEESE CUT SURFACE EVALUATION

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Abstract

Quantity of mold *Penicillium roqueforti* in blue cheese is a significant factor for cheese quality. Therefore it is important to have abilities for fast and accurate assessment of molds' quantity. Computer vision is popular as fast and not so expensive techniques for monitoring of cheese quality parameters. Segmentation algorithms are widely used for images analysis in order to extract specific objects from background. When the result of segmentation is binary image then the algorithms are known as thresholding algorithms. This paper presents an approach for evaluation the quantity of mold *Penicillium roqueforti* on cut surface of blue cheese, based on images processing with thresholding algorithms in HSI (Hue Saturation Intensity) color space.

Four trademarks of blue cheese are used for experiments. The images of cut surfaces of examined blue cheese are processed with application developed in NI LabView environment. All images are processed also with algorithm for mold distribution analysis in RGB color space which uses manual thresholding. The results for mold *Penicillium roqueforti* quantity which are calculated using developed application and algorithm for mold distribution in RGB color space, are compared. It is performed a correlation analysis for quantity of mold *Penicillium roqueforti* calculated with developed application versus quantity calculated by algorithm for mold distribution analysis in RGB color space.

The calculated correlation coefficients are high for intensity and hue components (about 0.9) which show that the results are statistically significant. Because of this, developed application could be used for automatic control of blue cheese quality.

The results show that developed application could be used in blue cheese quality control.

Key words: Blue cheese, *Penicillium roqueforti*, Images analysis, Thresholding algorithms, HIS (Hue Saturation Intensity).