The Color Analysis of Noodle Made From Modified Cassava Flour

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The Color Analysis of Noodle Made From Modified Cassava Flour

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Abstract. Noodles are one of the major traditional wheat-based products in Indonesia and the homogeneity of noodle products leads to huge competition. An increase in noodle consumption will lead to higher demand for wheat an as a result wheat is a resource expected to bein global short supply in the near future. This emphasizes there quirement for alternative sources of flour. Cassava is of importance to food industry due to its; high carbohydrate value, low cost and the unique functional properties of its flour and starch. This research determined the color level of modified cassava flour using digital color meter. Based on the results obtained, it is known that by using modified cassava flour produces more attractive color of noodle products. It is expected that the use of this mocaf can reduce the amount of costs incurred in making noodles.

1. Introduction

Noodles are the traditional staple food in many Asian countries like China, Japan and Korea [1]. Wheat-based noodles have been one of the traditional staple foods in Asian countries for thousands of years. They have also become increasingly popular outside Asia with the growing consumer interest in noodles accounting for more than 55% of global wheat production [2]. Increasing use wheat flour is a result of diet transformation from traditional food to western foods, thus leading to increasing import of this flour [3]. Beside the cost, increasing awareness of celiac disease of wheat in world has led to ongoing-research for low-cost and sustainable to wheat [4].

Nowdays, in order to enrich the varieties of noodles, wheat noodles have been fortified with various ingredient [5]. Previous reseach explained that mocaf has similar characteristics with wheat flour [6] [6, Agustia et al., 2019]. The main constituents in cassava are water (60 g 100 g^{-1}) and carbohydrates (38 g 100 g^{-1}), while the content of proteins, fat and fibers is limited (1.4, 0.28 and 1.8 g 100 g^{-1}) [7]. In addition, the cheap nature and fuctional properties of cassava flour make them viable subtitutes to wheat flour in countries where cassava flour is major food staple like Indonesia. Most especially, cassava flour is gluten free and thus confers no allergic effect such as celiac diseas when consumed [8]. However, the protein content in cassava flour largely lost during the fermentation process in its manufacture, even though the purpose of this food diversification is to overcome Protein Energy Deficiency. Therefore, carried out the addition of Spirulina and to reduce the fish odor of spirulina added basil leaf extract. No studies have been found regarding the use of added spirulina and

basil leaf extract in noodle based on cassava flour. Thus, this study was focused on analyzing the effect of them on the changes of color of noodle based on modified cassava flour.

2. Materials and Methods

Wheat flour and basil leaf were obtained from modern market in Tembalang. Mocaf flour were obtained from Cassava Factory in Solo, Central Java. Spirulina obtained from modern market in Tembalang.

2.1. Methods

2.2.1 Noodle preparation

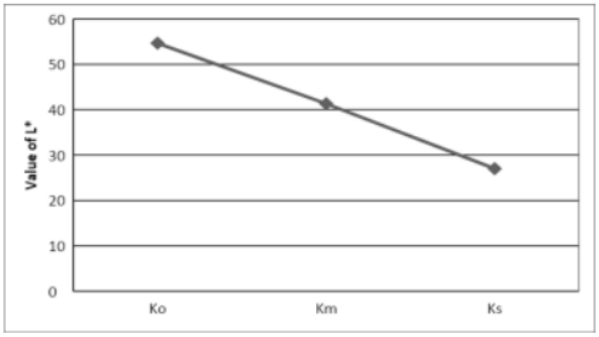
Prepararion of noodle was adopted from [9] with modification. The treatments given to wheat flour : mocaf flour are 35% : 15%. The treatments given to the noodles were as follow:
Ko : mocaf noodle without added spirulina and basil leaf extract
Km : mocaf noodle with added 5% of basil leaf extract
Ks : mocaf noodle with added 5% of basil leaf extract and 2% of spirulina

2.2.2 Color changes analyze

Color changes analyses was done from previous study by [10]. It was done by digital color meter (Apple, USA) on Machintos. The analysis performed is the value of L*a*b*. Samples that have been treated are placed under the camera. Furthermore, measurments are directed at the samples and the result of L*a*b* values will appear on the display screen.

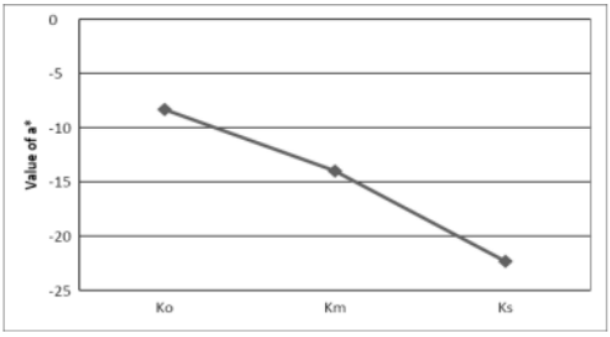
3. Results and Discussion

L*a*b* of noodle made from modified cassava flour were observed during storage and presented in graph as shown in Figure 1.

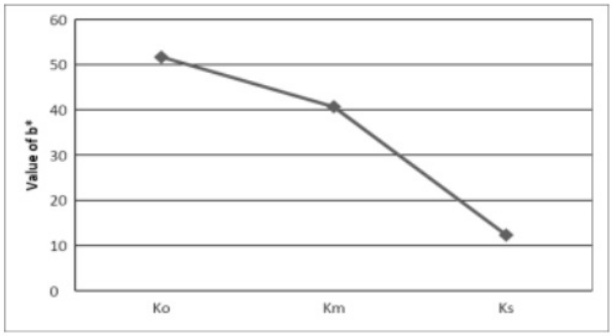


Ko : mocaf
Km: mocaf+5% of basil leaf extract
Ks : mocaf+5% of basil leaf extract+2%of spirulina

(a)



(b)



(c)

Figure 1. The color change (L*a*b) of mocaf noodles

Figure 2. The Mocaf Noodles

Color changes in food ingredients (including noodles) can be known based on the value L*a*b. The L* value donates the brightness level of noodle, the a* value donates the greenish color while the b* value represent the yellow color [3,11,12]. From Figure 1, it can be seen that noodle which was treated with basil leaf and spirulina had a lower color if compared with the mocaf noodle was not treated with basil leaf extract. This is indicated by a slower decrease in L*, a* and b* value in mocaf noodle with basil leaf extract and spirulina treatment which means basil leaf extract and spirulina given effect for the color change. Basil leaf extract contains chlorophyll which results in green mocaf noodle after grinding [13]. The presence of phycocyanin (blue) 1500-2000 mg and chlorophyll a (green) 115 mg pigments in spirulina causes reduced brightness but gives a greenish color in the mocaf noodle [14,15].

4. Conclusion

Based on the result, it can be conclude that basil leaf extract and spirulina can change the color of mocaf noodle. This result is related to noodle quality and consumer acceptance.

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