Study of making and characteristics of instant pindang seasoning powder using foam - mat drying method

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Abstract. The purpose of this study was to obtained the good physical and chemical characteristics of instant pindang seasoning powder and to obtained good sensory characteristic (color) of instant pindang seasoning powder. The study was conducted using foam-mat drying method with egg albumin as foaming agent. Egg albumin was used at different concentrations as 10%, 15%, and 20%. Response in research is organoleptic response (color), chemical response (moisture, ash, protein, fat, and carbohydrate content). The results showed that the difference of egg albumin concentration, affects the color and the proximate composition of instant pindang seasoning powder. Powder with 10% (w/w) egg albumin concentration has the darkest color and the highest moisture content of instant pindang seasoning powder.

1 Introduction

Pindang is one of the typical foods of Sumatra. Pindang cuisine is usually made from freshwater fish, such as Patin Fish or Baung Fish which is cooked together with a broth or sauce containing various kinds of herbs and spices [1]. Spices and herbs used in making pindang dishes are quite complete, including garlic, onion, ginger, turmeric, galangal, bay leaves, lemongrass, red chili, kandis acid, sugar and salt. In addition, fresh basil leaves are added as a complement to the taste of pindang cuisine [2].

Herbs and spices used in pindang cuisine are usually processed by finely ground or thinly sliced. The many types of herbs and spices that must be used result in making this dish take a long time to process the spices and herbs.

Today, most people want something fast and instant, including food. In the market, we find various instant seasoning products Indonesian specialties. However, until now there has not been found instant pindang seasoning products. Besides being more practical and fast, instant seasonings have the advantage of being more durable and overcoming the unavailability of some herbs or spices that must be added to a dish.

Drying technologies that can be used for making instant seasonings include foam-mat drying, spray drying, oven drying, and freeze drying methods. Each drying method has advantages and disadvantages. Spray drying and freeze drying methods can produce good quality products, but the production costs may very high. The foam-mat drying method is a simple drying method and can be done with simple equipment. Foam mat drying is a liquid drying technique and is sensitive to heat
through foaming techniques by adding foaming agents [3]. The foam-mat drying method is more profitable than the oven-free drying method because with the presence of foaming, the required temperature is lower so as not to damage the dried product and save energy [4].

Based on these reviews, the research on the manufacture of instant pindang seasoning powder is expected to facilitate the community, especially those on Sumatra Island in the manufacture of pindang cuisine. In addition, pindang cuisine is expected to be better known outside Sumatra Island.

2 Materials and Methods

2.1 Materials

The main ingredients used in this study were various kinds of herbs and spices consisting of garlic, shallots, ginger, turmeric, galangal, bay leaves, basil leaves, lemongrass, red chili, kandis acid, sugar, and salt, obtained from traditional market. In addition, egg white is used as a foaming agent for the foam-mat drying method.

2.2 Preparation of instant pindang seasoning powder

Wash all ingredients of herbs and spices, including garlic, shallots, ginger, turmeric, galangal, bay leaves, lemongrass, red chili. All the ingredients that have been washed, together with kandis acid and sugar, were then grounded. The foam is made by shaking the egg albumin with a concentration of 10%, 15%, and 20% using a mixer for 5 minutes to produce foam, then the material that has been mashed was then mixed with egg albumin foam and salt. After all the ingredients are well blended, the ingredients were dried using 70°C oven for 3 hours. The dried ingredients were grounded and shieved using a 60 mesh sieve to get a uniform powder.

2.3 Assays

The color test determined using hedonic test. The moisture, ash, protein and fat content were determined using AOAC method (2000).

2.4 Experimental Design

All experiments and analytical procedure were carried out at least in double analysis and the results were expressed as means. One way ANOVA analysis was done using SPSS and statistical significance was acceptable at p<0.05.

3 Results and discussion

3.1 Proximate compositions

The result of the percentage proximate composition of three various of instant pindang seasoning powder showed in Table 1.

| Sample | Proximate Composition (%) |  |
|--------|---------------------------|---|
|        | Moisture | Ash  | Protein | Fat  | Carbohydrate (By Difference) |
| 1      | 10.2002  | 4.2525 | 17.6497 | 1.2977 | 66.5999 |
| 2      | 5.6359   | 4.5097 | 19.1718 | 1.3621 | 69.3205 |
| 3      | 6.0019   | 4.4664 | 19.4014 | 1.3514 | 68.7789 |

Different superscripts in the same column indicate significantly different (p < 0.05) using ANOVA and Duncan advanced test.

1 = the addition of 10% (w/w) foam
2 = the addition of 15% (w/w) foam
3 = the addition of 20% (w/w) foam
From Table 1, it showed that the moisture content was the highest at the addition of 10% (w/w) foam, while there was no significantly difference between at the addition of 15% (w/w) and 20% (w/w) foam. Pindang seasoning with foam addition of 15% (w/w) and 20% (w/w) dried faster than the addition of foam 10% (w/w) due to the volume expanding so that it expand the surface area. The larger surface area exposed to the drying air, resulting in rapid moisture removal [5].

The ash, protein and fat content in instant pindang seasoning powder with the addition of 10% foam is lower than that of powder with the addition of 15% and 20% foam, due to the high moisture content which causes the proportion of other ingredients to be lower. Furthermore, the higher ash, protein, and fat content may be caused by the addition of egg albumin as a foaming agent.

Carbohydrates are the most abundant composition in herbs and spices, resulting in high levels of carbohydrates in instant pindang seasoning powder [6].

3.2 Color

The instant pindang seasoning powder obtained in this study has a yellowish brown color (Figure 1.).

![Figure 1. Three variants of instant pindang seasoning powder](image)

From Figure 1., it can be seen the color difference from the three instant pangang seasoning powder variants. Seasoning powder with the addition of 20% (w/w) foam has the brightest color. The higher the concentration of foam addition, the color of the powder will be brighter. This is because the foam acts as a coating agent so that the foam-coated material is not directly exposed to high temperature [7]. Heat damage such as brown color occurred due to exposure of product to high temperature [8].

4 Conclusion

Instant pindang seasoning powder can be made by foam-mat drying method. The difference of egg albumin foam concentration affects the proximate composition and the color of instant pindang seasoning powder. Powder with 10% (w/w) foam concentration has the highest moisture content and the darkest color.
5 References

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