The mixture of soybean powder and dragon fruit peel powder as high fiber functional drink

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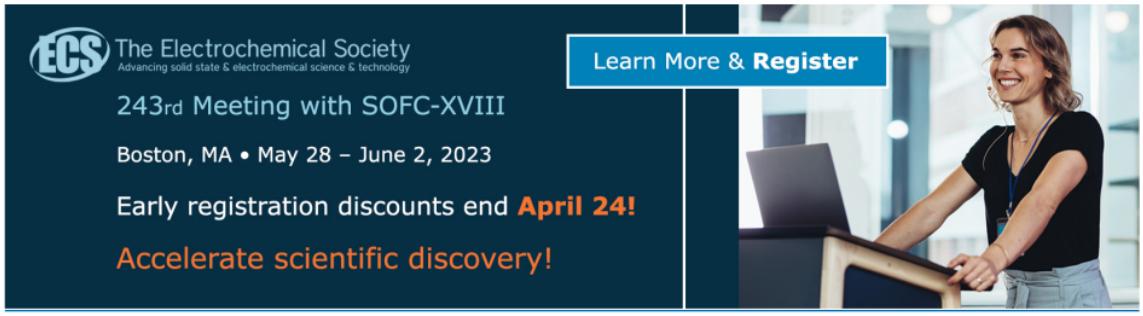

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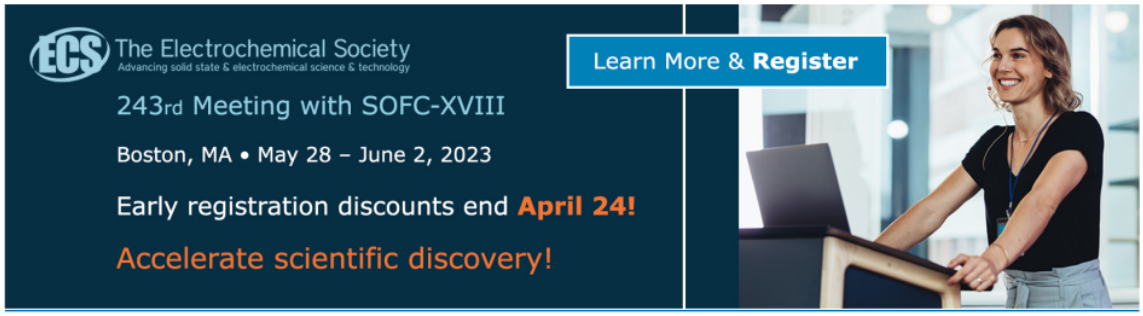

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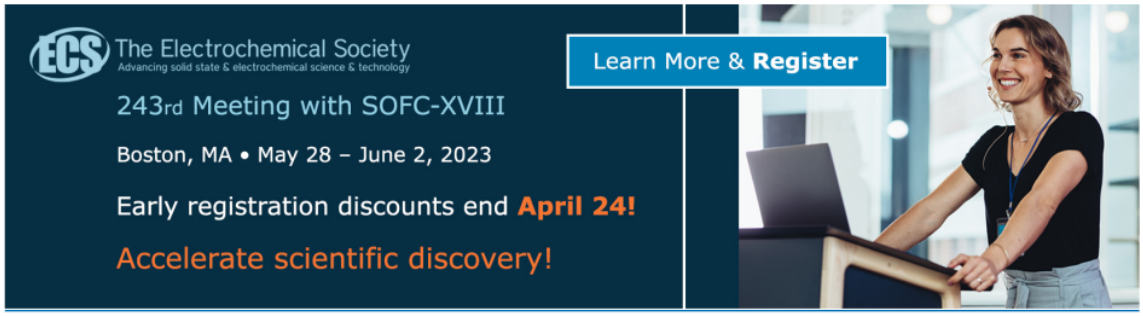
The mixture of soybean powder and dragon fruit peel powder as high fiber functional drink



The mixture of soybean powder and dragon fruit peel powder as high fiber functional drink

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Abstract.
Dietary fiber intake provides many health benefits. Individuals with low intakes of dietary fiber appear to be at significantly higher risk for stroke, obesity, diabetes,hypertension, certain gastrointestinal diseases, and coronary heart disease. Functional drink with higher fiber is expected to increase fiber intake in society. The aims of the research is to investigated the charateristic of the mixture of of soybean powder and dragon fruit peel powder as functional drink. All experiment were designed in complete random. Dragon fruit peel powder and soy powder were mixed according to the treatments. The result showed that dragon fuit peel powder give higher water content, soluble, insoluble and total dietary fiber. Moreover the color functional drink from dragon fuit peel powder have darker and red color..

1. Introduction

Innovation of functional food has shown rapid development in the last decade. Functional food is predicted to become a food industry trend in the next 5-10 years. Functional food is natural and processed food ingredients that contain one or more functional components that can improve physiological effect or prevent and reduce the risk of certain diseases and health problems. In its development, functional food must show benefits with the amount normally consumed as part of daily diet that must remain in the form of food, not pills or capsules. One group of compounds that have physiological functions in functional food is food fiber [1].

Various studies related to functional food have been carried out by Indonesia Research Institute which is dietary fiber become trending research topics, namely 11% of the total number of studies on functional food during 2005-2009 [2]. There is a tendency of consumers towards the use of functional foods that require dietary fiber as its constituent components, such as low calorie foods for weight control, fruits as functional foods, foods for toddlers nutrition, healthy snacks made from vegetables and nuts and foods for digestive health for example cereal and yogurt. This shows that food fiber is a barometer for other functional food categories [2].

Dietary fiber is a part of functional food whose main function is to help maintain gastrointestinal health. Dietary fiber is the residue from plant cell walls that are not hydrolyzed or digested by human digestive enzymes, including hemicellulose, cellulose, lignin, oligosaccharides, pectin, gum, and waxy coating. The benefits of dietary fiber are to controlling weight or obesity, controlling diabetes, preventing gastrointestinal disorders, preventing colon cancer, lowering cholesterol and cardiovascular disease [3]. Dietary fiber is divided into two groups: 1) Soluble dietary fiber, namely pectin and gum which is abundant in fruits and vegetables, 2) Insoluble dietary fiber, which is cellulose, hemicellulose

and lignin, which is a lot found in cereal, nuts and vegetables [4]. The amount of dietary fiber that must be consumed by healthy adults is 20-35 g / day or 10-15 g / 1000 kcal of menu [2].

The examples of high-fiber foods are soybeans and dragon fruit. Soybean is an important commodity that is used as a source of food, feed, and as an industrial raw material. Apart from being a source of protein, soybean is also a source of food fiber (dietary fiber). The total content of soybean dietary fiber ranges from 5.56 - 8.58% with soluble food fiber 1.52 - 3.28% and insoluble food fiber 3.58 - 6.09% [5]. Galunggung soybean powder drinks have lower levels of fat, protein and total minerals than commercial soy drinks, but have higher levels of carbohydrate and total food fiber. Var soybean drink, Galunggung is also proven to have the ability to reduce glucose and plasma cholesterol levels and improve the antioxidant status of diabetic-hypercholesterolemic rats. Given the advantages of functional soy powder drink, it is necessary to try it in combination with red dragon fruit to cover the lack of soothing soybean powder [6]. The addition of red dragon fruit can improve the chemical, physical and organoleptic properties of soy kefir. The results showed that 30% red dragon fruit substitution influences antioxidant activity, pH, taste, color and hedonic [7]. Yhe addition of dragon fruit peel extract affected to the content of protein, antioxidants, pH, taste and color of soy milk [8].

Some research on dragon fruit and soybeans has been done but no one has examined the potential for diversification of soybean and dragon fruit peel into fibrous functional drinks in powder form which have previously undergone a process of drying and flouring into instant dragon fruit soy powder. Therefore, this research needs to be done to test the right formulation as novelty.

2. Materials and Methods

2.1 Materials

Dragon fruit were obtaines from dragon fruit plantation at Rembangan, Jember. Dragon fruit has similar age, maturity, size, colour, and has no defects, and they were delivered immediately to the laboratory. Dragon fruit were cut, taken the peel, cut, dried at 60^{o}C until constant water content, crush it into powder drined and sieve with 80 mesh sieve. Soy powder is used Melilea soy powder. Dragon fruit peel powder and soy powder were mixed according to the treatments.

2.2 Analysis

Powder drink was analyzed for moisture content [9] , fiber content used enzymatic gravimetric method [10], colour used colorider. The color of sample was represented in 3 parameters; L* (Lightness), a*(redness and greenness) and b* (yellowness and blueness) [11]. All analyzes were done in duplicate.

2.3 Statistics analysis

All experiment were designed in complete random design. The results were showed as mean values with standard deviations of triplicate. Statistical analysis of differences between mean values used the Duncan's multiple range tests with significance level $\alpha = 0{,}05$.

3. Result and Discussion

Dietary fiber intake provides many health benefits. Only 4,5-4,7% Indonesia people has a sufficient proportion of *f*ruit and vegetable consumption consumption (> 5 servings / week) [12]. Individuals with low intakes of dietary fiber appear to be at significantly higher risk for stroke, obesity, diabetes,hypertension, certain gastrointestinal diseases, and coronary heart disease. Functional drink with higher fiber is expected to increase fiber intake in society.

Table 1. Charateristic of functional drink from soy powder and dragon

Parameter	Comparison of soy powder : dragon fruit peel powder				
	0 : 100	25 : 75	50 : 50	75 : 25	100 : 0
Water content (%)	6,29±0,27^{b}	6,19±0,39^{b}	4,81±0,94^{a}	4,99±0,2^{a}	5,02±0,26^{a}
Soluble dietary fiber (%)	2,75±0,16^{e}	2,42±0,18^{d}	2,06±0,02^{c}	1,55±0,23^{b}	1,25±0,04^{a}
Insoluble dietary fiber (%)	14,31±0,08^{e}	11,78±1,19^{d}	10,39±0,28^{c}	8,41±0,01^{b}	6,36±0,02^{a}
Total dietary fiber (%)	17,06±0,85^{e}	14,87±0,42^{d}	12,44±0,04^{c}	9,95±0,03^{b}	7,60±0,06^{a}
L	37,08±1,96^{a}	38,73±1,92^{a}	41,99±2,43^{ab}	45,64±1,18^{b}	67,72±4,78^{c}
A	35,85±3,89^{d}	31,42±3,87^{cd}	28,11±2,02^{bc}	24,17±0,62^{b}	0,89±0,61^{a}
B	2,00±0,37^{a}	1,98±0,38^{a}	2,65±0,48^{a}	2,97±0,16^{a}	15,77±2,47^{b}

The same lowercase notation in the same line showed no significant difference at the 95% (Duncan test, $p<0.05$)

Table 1 shows that water content of functional drink is low (4,99-6,29%). Low water content in functional drink to longer shelf life. Products with water content below 12% have a long shelf life [13]. In this research, drying proces used 60^{o}C for 10 hours. The water content is different with dried pitaya peel that have 3,06-4,25% of water content [11], wherever used 60-80^{o}C for 11-25 hours. The water content of this functional food is lower than okra flour that have 9,01-9,08% of water content [14].

Dietary fiber is classified to solubility and insolubility dietary fiber according to it's solubility. This functional drink have 1,55-2,75% of soluble dietary fiber (SF), 6,36-14,31% of insoluble dietary fiber (IDF) and 7,60-17,06% of dietary fiber (DF). The higher proporsion of dragon fruit peel powder giver higher soluble and insoluble fiber. This is shows that dragon fruit peel powder have higher soluble and insoluble fiber than soy powder. The good ratio of IDF to SDF is 3,8 : 1,0 [7]. But, in this research shows that the ratio of IDF to SDF is more than previously mentioned. Another research shows that determination of crude fiber by acid and alkali digestion give 26,97-28,45% on unblanched pitaya peel powder. During drying process occurs degradation of pectin, cellulose or hemicellulose [11]. Red dragon fruit peel consist of about 22% of all fruit weight. The dietary fiber content up to 69,3% consisting of 56,50% IDF and 14,28% SDF [7]. In dragon fruit peels there is up to 20,34% pectin which is part of the water soluble fiber [15]. Pectin from dragon fruit peel powder can function as a gelling agent, thickener, stabilier and emulsifier. Soluble fiber affects on serum lipids, insoluble fiber provides benefits as a laxative benefits. However, despite these commonly used generalizations, scientific evidence supporting that soluble fibers lower cholesterol and insoluble fibers increase stool weight is inconsistent [16].

Drying process also effects to the colour of functional drink. The color was measured and showed as the hunter parameter (L*, a*, b*) which was shown in Table 1. It was found that the color of functional drink was significantly changes in all values. The soybean powder showed brighter than dragon fruit peel powder (higher L). Higher a in showed that intensity of the red-purple color is higher because this peel have anthocyanin and betacyanin as an important fruit pigmen which showed the antioxidant activity. The anthocyanin containt of dried pitaya peel up to 38,57 mg/g dry weight. Drying temperature (60^{o}C) caused thermal degradation on betacyanin and anthocyanin content during drying process [11]. Soybean powder have a caretenoid pigment [17] so it have higher b value.

Conclusion

Dragon fuit peel powder give higher water content, soluble, insoluble and total dietary fiber. Moreover the color functional drink from dragon fuit peel powder have darker dan red color. Furthermore, the antioxidant properties from this functional drink is also remmended to be researched.

5. Acknowwledgement
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References

[1] Gardjito, M., Djuwardi, A., Harmayani, E. 2012. *Pangan Nusantara. Karakteristik dan Prospek untuk Percepatan Diversifikasi Pangan*. (Kecana Prenada Media Group, 2013).
[2] Jatraningrum, D. A. 2012 Analisis Tren Penelitian Fungsional : Katagori Bahan Serat Pangan. *J. Teknol. dan Ind. Pangan* **XXIII**, 64–68.
[3] Herminingsih, A. 2010. *Manfaat Serat dalam MenuMakanan*. Jakarta : Universitas Mercu Buana.
[4] Dodevska, M. S. *et al.* 2013. Characterisation of dietary fibre components in cereals and legumes used in Serbian diet. *Food Chem.* **141**, 1624–1629.
[5] Ratnaningsih, N., Ginting, E., Adie, M. M. & Harnowo, D. 2018. Sifat Fisiko-Kimia Dan Kandungan Serat Pangan Galur-Galur Harapan Kedelai. *J. Penelit. Pascapanen Pertan.* **14**, 35.
[6] Arivani, S., Handajani, S., Affandi, D. R. & Listyaningsih, E. 2012. Potensi minuman bubuk kedelai (var. Galunggung) sebagai minuman fungsional: sifat fisikokimia, efek hipoglikemik dan hipokolesterolemik serta status antioksidan. *J. Gizi Klin. Indoneisa* **8**, 158–165.
[7] Hernawati, Setiawan, N. A., Shintawatin, R. & Priyandoko, D. 2018. The role of red dragon fruit peel (Hylocereus polyrhizus) to improvement blood lipid levels of hyperlipidaemia male mice. in *IOP Conf. Series: Journal of Physics: Conf. Series* **1013** 012167.
[8] MD, M., Nisa, M. I. & Prasetya, D. Aplikasi Ekstrak Kulit Buah Naga Merah (Hylocereus polyrhizus) Pada Pembuatan Susu Kedelai (Hylocereus polyrhizus) Application Of The Rind Extract Of Hylocereus polyrhizus On Making Soybean Milk. *Agritech J. Teknol. Pangan dan Has. Pertan.* **2**.
[9] AOAC. 1995. *Official Method of Analysis of The Association Analitycal Chemist*. (Inc. Washington, DC.
[10] Asp NG, Schweizer TF, Southgate DAT, T. O. 1992. Dietary fibre analysis. in *Dietary fibre. A component of food. Nutritional function in health and disease* (ed. Schweizer TF, E. C.) 57–102 (Springer- Verlag).
[11] Campus, N. & Road, C. 2013. Effects of blanching and drying on fiber rich powder from pitaya (Hylocereus undatus) peel. *Int. Food Res. J.* **20**, 1595–1600.
[12] Tim Riskesdas 2018. 2019. *Hasil Riset Kesehatan Dasar (Riskesdas) 2018*. Jakarta : Kementerian Kesehatan Republik Indonesia.
[13] Falola, A. O., Olatidoye, O. P., Adesala, S. O. & Daramola, O. 2015. Effect of Different Processing Methods on Proximate , Functional and Pasting Properties of Plantain Flour. *Asian J. Agric. Food Sci.* **03**, 522–528.
[14] Rindiani, R., Warsito, H. & Maria Rosiana, N. The effect of blanching and drying temperature upon proximate composition of okra flour. in *IOP Conf. Ser.: Earth Environ. Sci.* **207** 012045.
[15] Norulfairuz, D., Zaidel, A., Rashid, J. & Hazirah, N. 2017. Extraction and Characterisation of Pectin from Dragon Fruit (Hylocereus Polyrhizus) Peels. *Chem. Eng. Trans.* **56**, 805–810.
[16] Slavin, J. Fiber and prebiotics: 2013. Mechanisms and health benefits. *Nutrients* **5**, 1417–1435
[17] Monma, M., Ito, M., Saito, M. & Chikuni, K. 1994. Carotenoid Components in Soybean Seeds Varying with Seed Color and Maturation Stage Carotenoid Components in Soybean Seeds Varying with Seed Color and Maturation Stage. *Biosci.Biotech.Biochem* **5**, 926–930.

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