PRODUCTION AND ANALYSIS PROTEIN AND POSPHOR MINERAL OF A HIGH NUTRITION CHIPS

By

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Introduction

- Indonesia : a country rich with natural product from marine, fishery and agriculture sector.

- Cassava : is a natural product , rich with carbohydrate
  Benefit of cassava is :
  as an alcoholic beverage,
  a material for tapioca flour production
  From it , people can production of chips.
  To obtain a chip with high nutrition contain, it was conducted by fortification technique.

- An effort of fortification is :
  nutrition contains increased
  diversification of product.

This research used an ill (***Monopterus albus Zuieuw***) and tiny sea fish (***Stolephorus* Sp.**)

An ill (*Monopterus albus Zuieuw*)

(http://www.wikipedia.co.id/wiki/belut)

An ill (*Monopterus albus Zuieuw*) is:

- **fishery product.**
- **rich of protein (18.4 g per 100g materials) and phosphor (200,00 mg per 100 g materials).**
- **Protein and phosphor nutrition are necessary of our bodies.**

Introduction

Tiny sea fish (*Stolephorus* Sp.) have three species:
Rice tiny sea fish (*Stolephorus comrsouli*),
Japuh tiny sea fish (*Dussumieria accuta*) and
Kadrak tiny sea fish (*Stolephorus Insularis*).

In Indonesia , almost People no like to its, but tiny sea fish constitute food source are easy to break down, just 8 hour after its keeping.

Usually, tiny sea fish are preserving with drying or salting. The nutrition contains of fresh tiny sea fish and preserving of tiny sea fish, can be found in table 1.

Table 1:
Nutrition contains of Tiny sea fish fresh and Tiny sea fish preserving per 100 g

Nutrition contains	Tiny sea fish fresh	Tiny sea fish preserving
Protein(g)	16.068	68.7
Phosphor (mg)	500	1500

Reference: Poedjiadi, 2005

Problems :

How many influence of ill flour and tiny sea fish flour are concerning to nutrition contain, especially protein and phosphor mineral contains from chips are produced?

The aim of this research is:

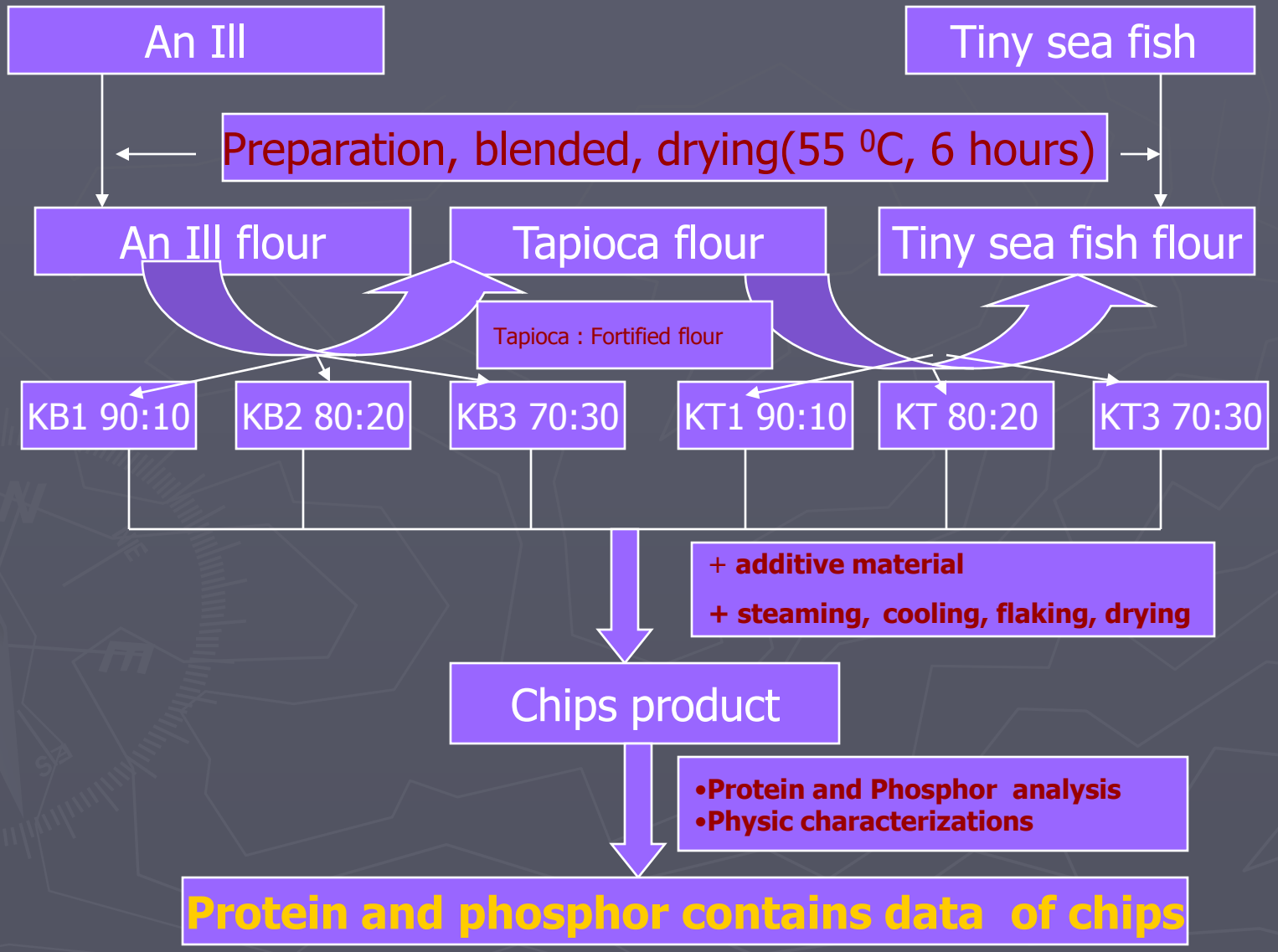
To understand of nutrition contains, especially protein and phosphor minerals of fortified chips with ill or tiny sea fish flour.

Materials

- Tapioca flour, an ill flour, tiny sea fish flour and food additive as like as salt, sugar, white onion and pepper.

- Chemicals : HCl, n-heksana, NaOH, KI, H_2SO_4, $Na_2S_2O_3.5\ H_2O$, CH_3COOH, KIO_3, K_2SO_4, Na_2SO_4, H_3BO_3, selen, Luff-Schorll reagent (Na_2CO_3, citric acid, and $CuSO_4.5\ H_2O$), Indicator metilen red and brom cresol green.

Production and analysis chips fortified



Results and Discussion

a. Chips Production

It have been produced three kinds of chips with variation in ratio of tapioca and ill fortified flour,

were KB1 (90:10), KB2 (80:20) and KB3 (70:30)

KB1 (90:10)

KB2 (80:20)

KB3 (70:30)

- **Figure 1**: An ill fortified Chips

In addition, It have been produced three kinds of chips with variation in ratio of tapioca and tiny sea fish flour, were KT1 (90:10), KT2 (80:20) and KT3 (70:30),

KT1 (90:10) **KT2 (80:20)** **KT3(70:30)**

Figure 2: Tiny Sea Fish fortified Chips

Results and Discussion

b. Nutrition Contains Analysis Result

Nutrition contains analysis, especially on protein and phosphor mineral contains of chips showed on table 2.

Table 2: Protein and Phosphor mineral contains per 100 gram chip.

Nutrition	Ill fortified Chip			Tiny sea fish fortified Chip		
	KB1	KB2	KB3	KT1	KT2	KT3
Protein (g)	8.37	14.82	19.74	11.87	14.77	19.22
Phosphor (mg)	200	380	560	300	310	550

Protein contains in an ill is 18.4 g per 100 g material, similar with protein contains in a cow meat (12.8 g per 100 g material).

An ill protein contains is very easy to digest, so very compatible for all people, from baby until oldest (Rukmana, 2003).

An ill protein have many good amino acid, as like as leusin, lisin, aspartic acid, and glutamic acid. Non essential amino acid be founded in an ill is arginine. Arginine contains in an ill influence people growth hormone production (HGH). HGH help on muscle healthy increased and decreased of body lipids (Almatsier, 2004).

Benefit of Phosphor :

- Very important in the bond forming.
- Phosphor and calcium must be balanced, because both can made starchy and strong of bond,
- Free of osteoporoses.

Table 3: Protein and Phosphor Mineral contains per 100 gram of Prawn Chips and Fish Chips.

Nutrition	Prawn Chips	Fish Chips
Protein (g)	17.2	16.0
Phosphor (mg)	337	20

Reference: Poedjiadi, 2005.

- Analysis of nutrition contains, especially protein and phosphor mineral showed that KB3 have 19.74 g protein and 560 mg phosphor, and KT3 have protein 19.22 g and 550 mg phosphor contains.

- If that protein and phosphor result of KB3 and KT3 are compared to Prawn and fish chips, showed that KB3 and KT3 have nutrition result more than Prawn and fish chips.

- Characteristic of KB3 and KT3 result showed :

  All of characteristic increased with ill flour and tiny sea fish more are added, and all of chips are crispy.

  Tiny sea fish fortified chips has same characteristic with ill fortified Chips.

Widyakarya Pangan dan Gizi LIPI, 1993, showed of phosphor mean are needed of people per day:

- Baby : 200-250 mg
- Children : 250-400 mg
- Adult : 400 – 500 mg
- Mother pregnancy and give suck: 200 – 300 mg

Mineral contains in a tiny sea fish are phosphor and calcium.

Phosphor is a major mineral, are needed of body more than 100 mg per day.

We found a phosphor on many of food, especially food with rich of protein, as like as meat, chicken meat, fish, milk, and peanut.

Benefit of phosphor is bond and tooth calcification, energy transfer, nutrition absorption and transportation.

Conclusion

- Be based on the research result, we have summaries:

- It have been produced of chips with high of protein and phosphor minerals nutrition.
- Production by fortified flour from an ill resulted three kinds of chips were KB1 (10%), KB2 (20%) and KB3 (30%) and from tiny sea fish flour resulted three kinds of chips, were KT1 (10%), KT2 (20%) and KT3 (30%).
- Analysis of nutrition contains, especially protein and phosphor mineral showed that KB3 have 19.74 g protein and 560 mg phosphor, and KT3 have protein 19.22 g and 550 mg phosphor contains.
- Protein and phosphor mineral contains from product are bigger than protein and phosphor mineral contains of prawn and fish chips at the market.


Thank you

- Table 1: Nutrition contains of tapioca flour per 100 grams materials.
- NutritionContains per 100 g materials
- Water 9,0 g Protein1,1 g Lipida 0,5 g Carbohydrate 88,2 g Mineral* Ca (calcium)* P (phosphor)* Fe (Ferrum) 84 mg 125 mg 1,0 mg
- Vitamine* A* B1* C 0 SI 0,4 mg 0 mg

Reference: (Poedjiadi, 2005)

- Table 2: Nutrion contains of ill per 100 grams materials
- NutritionTotal contains Energi (Kkal)303.00

Protein (g)	18,40
Lipida (g)	27,00
Carbohydrat (g)	0,00
Calsium(mg)	20,00
Phosphor (mg)	200,00
Ferrum (mg)	20,00
Vitamine A (SI)	1.600,00
Vitamine B1 (mg)	0,10
Vitamine C (mg)	2,00
Water (g)	58,00

Reference : Sarwono, 2003