Promoting of The Use of Local Food Resources for Healthy Food: In The Case of Southern of Thailand

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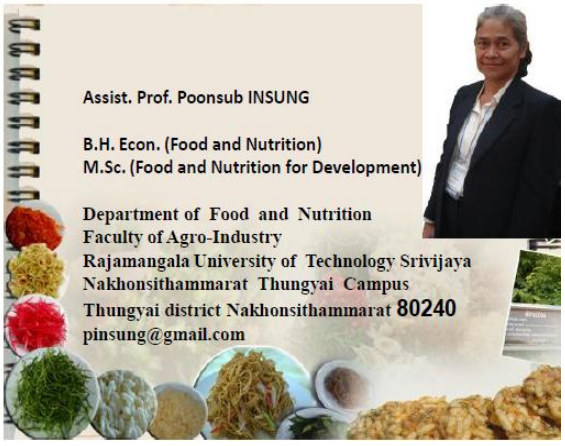
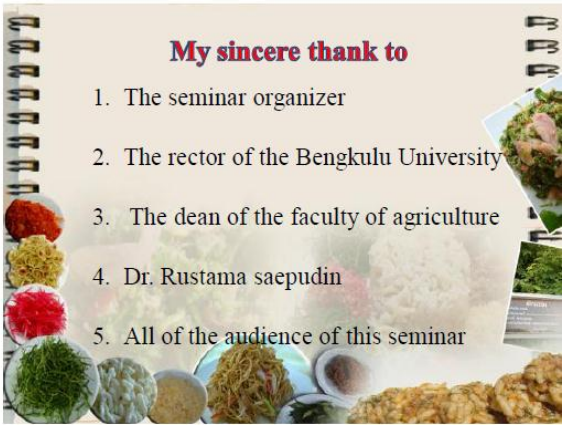
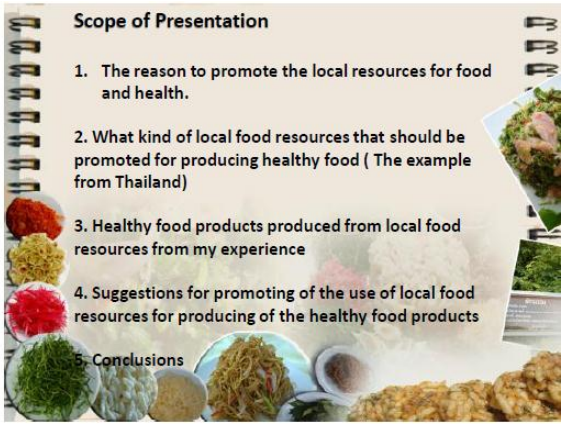






1. Why do we to promote the local resources for food and health for the ASEAN countries ?

Advantages of Indonesia

Diversity in

-Plants and animal species

- Other natural resources

Disadvantages

The use of some local food resources especially the indigenous vegetable for food is not cover enough

Whereas people in many countries in ASEAN consume almost every edible plant in their environment, most of the Indonesian accept plant for food that had been recommended

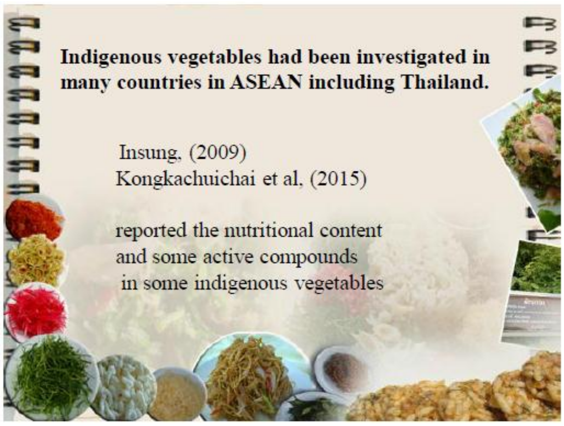
Therefore, we need to promote the use of local resources for food in Indonesia

This might be the answer for the first question

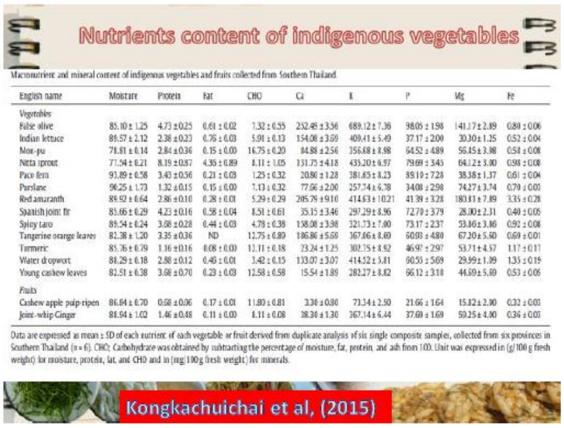
Scope of Presentation

1. The reason to promote the local resources for food and health.
2. What kind of local food resources that should be promoted for producing healthy food (The example from Thailand)
3. Healthy food products produced from local food resources from my experience
4. Suggestions for promoting of the use of local food resources for producing of the healthy food products
5. Conclusions

1. Indigenous vegetables



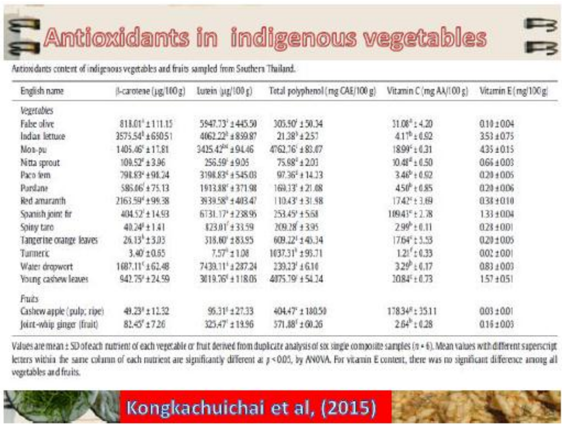

It was found some food resources have their content which is diverse in bioactive compounds that possess antioxidant activities including
Tocopherol
Ascorbic acid
Carotenoids
Polyphenol
Phenolic compound
Anthocyanin
(Kongkachuichai, 2015)



Macronutrient and mineral content of indigenous vegetables and fruits collected from Southern Thailand.

English name	Moisture	Protein	Fat	CHO	Ca	K	P	Mg	Fe
Vegetables									
False olive	85.10 ± 1.25	4.73 ± 0.25	0.61 ± 0.02	7.32 ± 0.55	252.49 ± 3.56	689.12 ± 7.36	98.05 ± 1.98	141.17 ± 2.89	0.80 ± 0.06
Indian lettuce	89.57 ± 2.12	2.38 ± 0.23	0.76 ± 0.03	5.91 ± 0.13	154.08 ± 3.69	409.41 ± 5.49	37.17 ± 2.00	30.30 ± 1.25	0.52 ± 0.04
Mon-pu	78.81 ± 0.14	2.84 ± 0.36	0.15 ± 0.00	16.75 ± 0.20	84.88 ± 2.56	356.68 ± 8.98	64.52 ± 4.89	56.45 ± 3.98	0.58 ± 0.08
Nitta sprout	77.54 ± 0.21	8.19 ± 0.87	4.36 ± 0.89	8.11 ± 1.05	131.75 ± 4.18	435.20 ± 6.97	79.69 ± 3.45	64.12 ± 3.00	0.98 ± 0.08
Paco fern	93.89 ± 0.58	3.43 ± 0.56	0.21 ± 0.03	1.25 ± 0.32	20.80 ± 1.28	381.65 ± 8.23	89.10 ± 7.28	38.38 ± 1.37	0.61 ± 0.04
Purslane	90.25 ± 1.73	1.32 ± 0.15	0.15 ± 0.00	7.13 ± 0.32	77.66 ± 2.00	257.74 ± 6.78	34.08 ± 2.98	74.27 ± 3.74	0.70 ± 0.03
Red amaranth	89.92 ± 0.64	2.86 ± 0.10	0.28 ± 0.01	5.29 ± 0.29	205.79 ± 9.10	414.63 ± 10.21	41.39 ± 3.28	180.81 ± 7.89	3.35 ± 0.28
Spanish joint fir	85.66 ± 0.29	4.23 ± 0.16	0.58 ± 0.04	8.51 ± 0.61	35.15 ± 3.46	297.29 ± 8.96	72.70 ± 3.79	28.00 ± 2.31	0.40 ± 0.06
Spiny taro	89.54 ± 0.24	3.68 ± 0.28	0.44 ± 0.03	4.78 ± 0.38	158.08 ± 3.98	321.73 ± 7.00	73.17 ± 2.37	53.86 ± 3.86	0.92 ± 0.08
Tangerine orange leaves	82.38 ± 1.20	3.35 ± 0.36	ND	12.75 ± 6.89	186.86 ± 5.60	367.06 ± 8.69	60.93 ± 4.80	67.20 ± 5.60	0.69 ± 0.01
Turmeric	85.76 ± 0.79	1.16 ± 0.16	0.08 ± 0.00	12.11 ± 0.18	23.24 ± 1.25	302.75 ± 8.92	46.97 ± 2.97	53.71 ± 4.57	1.17 ± 0.11
Water dropwort	88.29 ± 0.18	2.88 ± 0.12	0.46 ± 0.01	3.42 ± 0.15	133.07 ± 3.07	414.52 ± 5.81	60.55 ± 5.69	29.99 ± 1.09	1.35 ± 0.19
Young cashew leaves	82.51 ± 0.38	3.68 ± 0.70	0.23 ± 0.03	12.58 ± 0.58	15.54 ± 1.89	282.27 ± 8.82	66.12 ± 3.18	44.69 ± 5.09	0.53 ± 0.06
Fruits									
Cashew apple pulp-ripen	86.84 ± 0.70	0.68 ± 0.06	0.17 ± 0.01	11.80 ± 0.81	3.30 ± 0.80	73.34 ± 2.50	21.66 ± 1.64	15.82 ± 2.00	0.32 ± 0.03
Joint-whip Ginger	88.94 ± 1.02	1.46 ± 0.48	0.11 ± 0.00	8.11 ± 0.08	38.30 ± 1.30	367.14 ± 6.44	37.69 ± 1.69	59.25 ± 4.00	0.36 ± 0.03

Data are expressed as mean ± SD of each nutrient of each vegetable or fruit derived from duplicate analysis of six single composite samples, collected from six provinces in Southern Thailand (n = 6). CHO; Carbohydrate was obtained by subtracting the percentage of moisture, fat, protein, and ash from 100. Unit was expressed in (g/100 g fresh weight) for moisture, protein, fat, and CHO and in (mg/100 g fresh weight) for minerals.



Antioxidants content of indigenous vegetables and fruits sampled from Southern Thailand.

English name	β-carotene (μg/100 g)	Lutein (μg/100 g)	Total polyphenol (mg CAE/100 g)	Vitamin C (mg AA/100 g)	Vitamin E (mg/100 g)
Vegetables					
False olive	818.01^{h} ± 111.15	5947.73^{i} ± 445.50	305.90^{j} ± 50.34	31.08^{d} ± 4.20	0.10 ± 0.04
Indian lettuce	3575.54^{l} ± 650.51	4062.22^{h} ± 859.87	21.38^{b} ± 2.57	4.17^{b} ± 0.92	3.53 ± 0.75
Mon-pu	1405.46^{c} ± 17.81	3425.42^{bc} ± 94.46	4762.76^{i} ± 83.07	18.99^{c} ± 0.31	4.35 ± 0.15
Nitta sprout	109.52^{e} ± 3.96	256.59^{i} ± 9.05	75.98^{e} ± 2.03	10.48^{d} ± 0.50	0.66 ± 0.03
Paco fern	798.83^{a} ± 98.24	3198.83^{c} ± 545.03	97.36^{e} ± 14.23	3.46^{b} ± 0.92	0.20 ± 0.05
Purslane	586.06^{f} ± 75.13	1913.88^{e} ± 371.98	169.13^{f} ± 21.08	4.50^{b} ± 0.85	0.20 ± 0.06
Red amaranth	2163.59^{d} ± 99.38	3939.58^{b} ± 403.47	110.43^{e} ± 31.98	17.42^{c} ± 3.69	0.38 ± 0.10
Spanish joint fir	404.52^{f} ± 14.93	6731.17^{a} ± 238.96	253.45^{i} ± 5.68	109.41^{e} ± 2.78	1.33 ± 0.04
Spiny taro	40.24^{g} ± 1.41	823.01^{f} ± 33.59	209.28^{f} ± 3.95	2.99^{b} ± 0.11	0.28 ± 0.01
Tangerine orange leaves	26.13^{h} ± 3.03	318.60^{i} ± 83.95	609.22^{i} ± 45.34	17.64^{c} ± 5.53	0.20 ± 0.05
Turmeric	3.40^{i} ± 0.65	7.57^{h} ± 1.08	1037.31^{h} ± 95.71	1.21^{f} ± 0.33	0.02 ± 0.01
Water dropwort	1687.11^{c} ± 62.48	7439.11^{a} ± 287.24	239.23^{i} ± 6.10	3.29^{b} ± 0.17	0.83 ± 0.03
Young cashew leaves	942.75^{a} ± 24.59	3019.76^{d} ± 118.06	4075.79^{i} ± 54.24	20.84^{c} ± 0.73	1.57 ± 0.51
Fruits					
Cashew apple (pulp; ripe)	49.23^{g} ± 12.32	96.31^{g} ± 27.33	404.47^{c} ± 180.50	178.34^{g} ± 35.11	0.03 ± 0.01
Joint-whip ginger (fruit)	82.45^{f} ± 7.26	325.47^{i} ± 19.96	571.88^{f} ± 60.26	2.64^{b} ± 0.28	0.16 ± 0.03

Values are mean ± SD of each nutrient of each vegetable or fruit derived from duplicate analysis of six single composite samples (n = 6). Mean values with different superscript letters within the same column of each nutrient are significantly different at $p < 0.05$, by ANOVA. For vitamin E content, there was no significant difference among all vegetables and fruits.

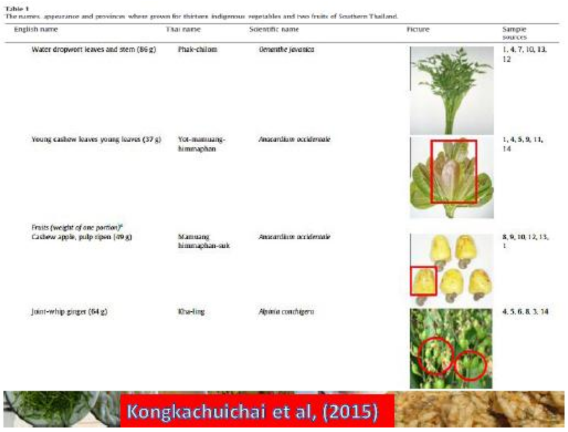
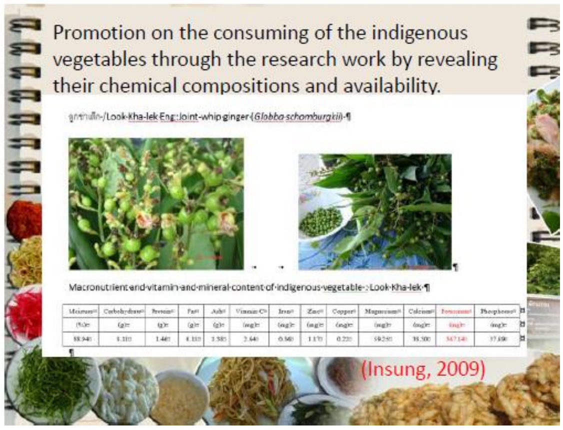
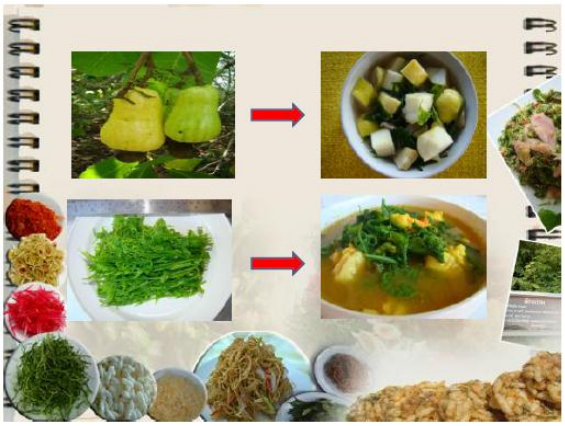


Table 1
The names, appearance and provinces where grown for thirteen indigenous vegetables and two fruits of Southern Thailand.

English name	Thai name	Scientific name	Picture	Sample sources
Water dropwort leaves and stem (86 g)	Phak-chilom	*Oenanthe javanica*		1, 4, 7, 10, 13, 12
Young cashew leaves young leaves (37 g)	Yot-mamuang-himmaphan	*Anacardium occidentale*		1, 4, 5, 9, 11, 14
Fruits (weight of one portion)[a]				
Cashew apple, pulp ripen (49 g)	Mamuang himmaphan-suk	*Anacardium occidentale*		8, 9, 10, 12, 13, 1
Joint-whip ginger (64 g)	Kha-ling	*Alpinia conchigera*		4, 5, 6, 8, 3, 14


Promotion on the consuming of the indigenous vegetables through the research work by revealing their chemical compositions and availability.
Look-kha-lek Eng: Joint-whip ginger (Globba schomburgkii)
Macronutrient and vitamin and mineral content of indigenous vegetable : Look-kha-lek
(Insung, 2009)




More than 16 species of local vegetables prepared for different menu of southern conventional food had been proposed for the southern Thais
Insung, 2011


Therefore
The first local recource should be promoted is indigenous vegetable


The other local resources that might be promoted for food and health is rice
Many ASEAN countries have a very much diversity In rice varieties.


These are some local rice varieties in Thailand that had been known their chemical compositions and properties


The most popular indigenous rice variety in Thailand such as Sang-Yod rice


Riceberry rice
Rice Berry


Riceberry Bread
@ms.riceberry
28 weeks ago

Many bioactive compounds and the nutritional contents of these rice varieties had been scrutinized and reported in the same way with indigenous vegetables

Determination of Phenolic Compounds, Flavonoids, and Antioxidant Activities in Water Extracts of Thai Red and White Rice Cultivars

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Watcharin Parunto MSc*, Noppamat Kaendee MSc*,
Sermkiat Tanuchit MSc***, Arunporn Itharat PhD**,
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The information on chemical compositions and some bioactive compounds which are essential for health is necessary for the food product developments to use them for the invention of different kind of food products that can be used for specific purposes

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My experiences on healthy food products development

1. Khao-yam Srivichai

Some aspects and back grounds on Kaoyum Srivichai products development

Traditional Khao Yam

Traditional Khao Yam

Advantage : Fresh
: High nutrient content
: Using local vegetables
: High food safety

Traditional Khao Yam

Disadvantage point of view:
: A shorter life span
: spoiled easier
: Have to consume meal to meal
: Need longer preparation time

To eliminate the weak point of the conventional Khao Yum, We had developed the new product so called

Khao Yam Srivichai

From disk

To shelf

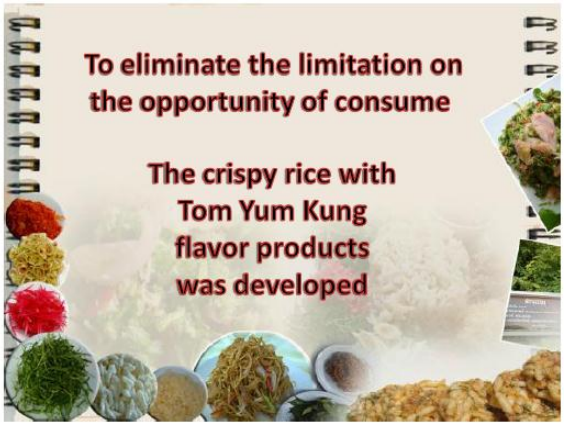

The product packaging of
Khao Yam Srivichai

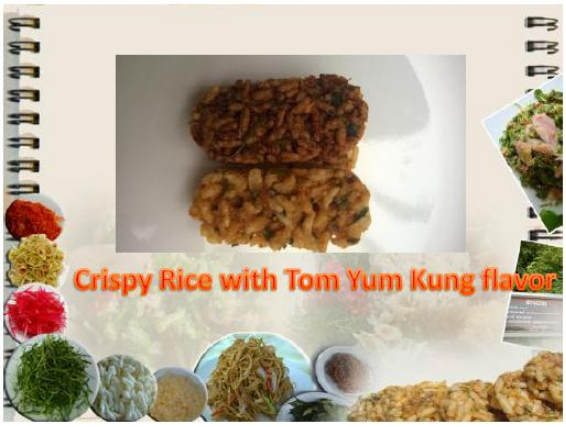

The final products


With silver prize award from Korea


The second product
The crispy rice with Tom
Yum Kung flavor


Tom-Yum-Khung
The most famous Thai food


To eliminate the limitation on
the opportunity of consume
The crispy rice with
Tom Yum Kung
flavor products
was developed


Crispy Rice with Tom Yum Kung flavor


The commercial products


The third product
Horse mango


Utilization alternatives
Ripe horse mango in the disk


Utilization alternatives
Fresh horse mango salad

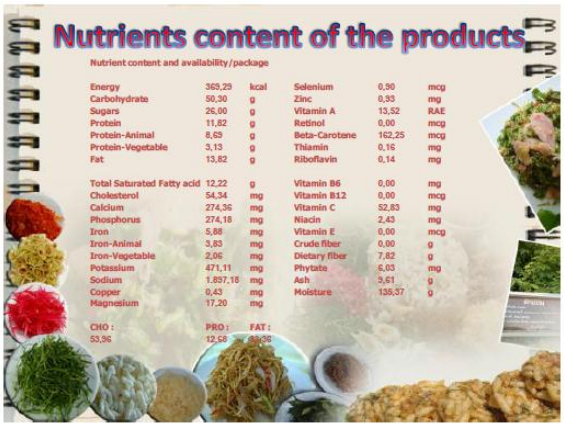

Limitation of fresh products
A shorter life span
: spoiled easier
: have to consume meal to meal

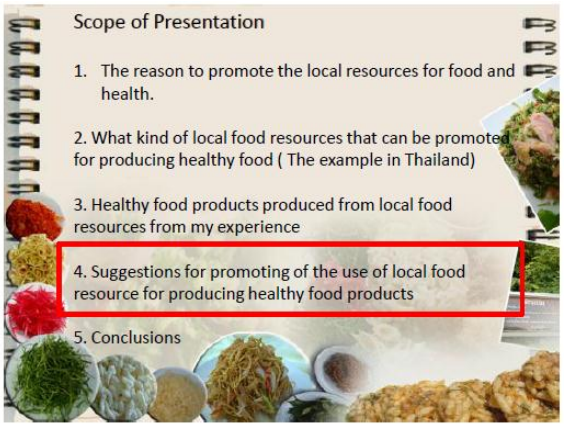

Solution alternatives
Drying
Fresh shredded horse mango
Dried shredded horse mango


Solution alternatives
Dried shredded horse mango
horse mango salad in the package with seasoning


Commercialized dried shredded horse mango with seasoning in the package


Products with easy to prepare and use
horse mango salad mixed with seasoning


Nutrients content of the products
Nutrient content and availability/package
Energy 363,29 kcal
Carbohydrate 50,30 g
Sugars 26,00 g
Protein 11,82 g
Protein-Animal 8,69 g
Protein-Vegetable 3,13 g
Fat 13,82 g
Total Saturated Fatty acid 12,22 g
Cholesterol 54,34 mg
Calcium 274,36 mg
Phosphorus 274,18 mg
Iron 5,88 mg
Iron-Animal 3,83 mg
Iron-Vegetable 2,06 mg
Potassium 471,11 mg
Sodium 1.897,18 mg
Copper 0,43 mg
Magnesium 17,20 mg
Selenium 0,90 mcg
Zinc 0,93 mg
Vitamin A 13,52 RAE
Retinol 0,00 mcg
Beta-Carotene 162,25 mcg
Thiamin 0,16 mg
Riboflavin 0,14 mg
Vitamin B6 0,00 mg
Vitamin B12 0,00 mcg
Vitamin C 52,83 mg
Niacin 2,43 mg
Vitamin E 0,00 mcg
Crude fiber 0,00 g
Dietary fiber 7,82 g
Phytate 6,03 mg
Ash 3,61 g
Moisture 135,37 g
CHO : 53,96
PRO : 12,68
FAT :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My suggestions
1. Require more reseach work on revealing the nutrient content and availability of local resources as scientic back ground for food development
2. The food develper should develop the food products that popular for the community and fit for the resources that available in the community
3. Select the food products that can be expanded to the commercialized scale.


Conclusions
1. The reason that we have to promote the local resources for food and health because there are plenty of local resources in indnesia
2. The two most prominent local resources for food and health that should be promoted in indonesia is local vegetables and local rice varieties.


3. The food delvelopers require more relevance reseach works on revealing the nutrient content and availability of local resources as scientific back ground for food products development
4. The food products that will be promoted must fit for the local need and had a potential for a commercial scale.


Thank you very much
for your kind attention
Terima kasih
ขอบคุณคะ