



# Natural Seasoning from Local Vegetables in Thailand

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## ABSTRACT

Local vegetables and herbs were cultivated in different part of Thailand. These plants had been studied for taste, flavor and functional properties such as antioxidant activity and antimutagenicity. According to their specific characteristic of local vegetables, fourteen types of local vegetables were selected for further studied. They were dried at 60 °C, ground and formulated into 4 different type of seasoning. They were seasoning for soup, curry, meat marinated and all purpose seasoning. Chemical quality of seasoning for soup and curry were evaluated and found that both seasoning contained natural high salt content and high in glutamic acid. The analysis value of antioxidant activity in seasoning of soup and curry showed at 64.49 ± 0.2 mg.Vit C/100 gm and 86.51 ± 1.5 mg.Vit C/100 gm respectively.

Sensory evaluation of Thai dishes (vegetable soup, green curry, roasted chicken and papaya salad) using those seasonings were performed by 9 points hedonic scale. The acceptability results showed that all the food evaluated on flavor, texture and total acceptability were in the range of like moderately to like very much except the color and appearance found slightly low score. In conclusion natural seasoning from local plants and herbs could have the potential to develop for healthy seasoning for enhancing of the tastes and flavor of foods.



## INTRODUCTION

There are many types of vegetable and herb were cultivated in Thailand such as sweet leaf bush, wild ginger, holy basil, galanga, Cumin cumin leave etc. These plants were commonly used in Thai cuisines to enhanced enhance the better taste and flavor. And these plants also had the antioxidant activity and antimutagenicity (Trakontivakorn et al., 2003Ref.1). According to their specific characteristic of local vegetables, twelve types of local vegetables and three types of mushroom were selected to study as the natural seasoning for the replacement of monosodium glutamate (MSG), salt and fish sauce in Thai cuisines.

## MATERIAL AND METHOD

**1. Sample preparation** 12 types of vegetables, sweet leaf bush, *Melientha Suavis* –Pierre, stink weed, wild ginger, holy basil, cowslip creeper flower, galangal, cumin leave, *Gotu Kola*, mint, *Tiliacora Triandra Diels*, chinese chives and 3 types of mushroom; Indian oyster, mushroom, Bhuthanese oyster mushroom and abalone mushroom were bought from local market in Thailand. All fresh vegetables and mushrooms were trimmed and cleaned. All plants were chopped or tear to small pieces and blanched in boiling water for 1 minute. Each vegetables and mushrooms were dried in 60°C oven until dried. All ingredients were grounded to powder and packed in closed PP plastic bag before using.

**2. Natural seasoning preparation** The vegetable powders and mushroom powders were prepared for 4 types of food. The ratio of vegetables and mushrooms were varied and mixed to be natural seasoning for each cuisine formulae.

**3. Quality analysis of the seasoning** The water activity, moisture content, %yield and colors (HunterLAB (L\* a\* b\*) measurement) of all ingredients–were determined. The seasonings were determined for antioxidant activities by DPPH assay (Brandwilliam et al., 1995) and microbiological safety, *Staphylococcus aureus*, *Clostridium perfringens*, *Salmonella sp.* and *Bacillus cereus*.

**4. Food preparation on natural seasoning and acceptability evaluation** The natural seasoning was applied in 4 Types of local Thai cuisines as vegetable soup, green curry, roasted chicken and papaya salad. The acceptability was evaluated by 9 points hedonic scale.

**5. Experimental design** The Randomized Complete Block Design (RCBD) was used in this experiment. The average and standard deviation were compared by Duncan New's Multiple Range Test at 95% confidence.

## RESULTS & DISCUSSION

After the chemical and physical properties were determined, the results were showed in Table 1. These samples contained very high of moisture content which interpreted the very low percent yield (w/w). The low yield could lead to the high requirement of raw materials and costs. But these local vegetable and mushroom were very cheap in Thailand. So this application may improve more value of these local ingredients. Moreover these ingredients had low water activity (0.26–0.58), so the natural seasonings were safe from microbiological growth (Fennema, 1958). Anyway the microbiological properties of the natural seasoning were also determined again, the result shown that they were safe from all microbiology (were not shown). If all materials were stored in tightly closed glass bottle under dark place, the quality of these materials were able to store for 6 months.

**Table 1** The Percentage of Yield of Samples and Water Activity of sample powders.

Samples <sup>20</sup>	Yield (%)	a <sub>w</sub>	Samples	Yield (%)	a <sub>w</sub>
sweet leaf bush	11.00	0.31	<i>Gotu Kola</i>	11.44	0.58
<i>Melientha Suavis</i> P.	14.96	0.36	Mint	5.24	0.45
stink weed	7.15	0.28	<i>Tiliacora Triandra D.</i>	17.00	0.27
wild ginger	11.28	0.42	chinese chives	9.74	0.26
holy basil	6.46	0.37	Indian oyster mushroom	6.90	0.49
cowslip creeper flower	10.00	0.31	Bhuthanese oyster	9.82	0.43
galangal	9.50	0.38	mushroom	7.64	
cumin leave	9.30	0.35	abalone mushroom		0.41

The colors of all ingredients were divided into 3 groups; light brown color group was wild ginger, mushroom, galangal; green color group was *Melientha svavis pierre*, holy basil, chinese chives, mint, cowslip creeper flower, *Gotu kola* and cumin leave; and brownish green color group was only *Tiliacora triandra diels* (result of L\* a\* b\* were not shown). After all plants were mixed together in different ratio as 4 types of seasoning, they were green. The 4 types of seasoning were the seasoning for soup, curry, meat marinated and all purpose seasoning which were applied to replace the MSG, salt and fish sauce in vegetable soup, green curry, roasted chicken and papaya salad. All foods were evaluated for acceptability by 9-hedonic scale evaluation. The acceptability results showed that all the food tested on flavor, texture and total acceptability were in the range of like moderately to like very much except the color and appearance found slightly low score (Table 2). Because Thai people were familiar red color of chili but these seasonings presented the green color.

**Table 2:** The Result of Acceptability Evaluation for Using of 4 Types of Seasoning

Type of Food	Color	Odor	Flavor	Texture	Acceptability
Vegetable soup	7.47±0.83 <sup>a</sup>	7.13±1.13 <sup>a</sup>	6.60±1.35 <sup>bc</sup>	7.13±1.30 <sup>bc</sup>	7.20±0.94 <sup>a</sup>
Green Curry	7.80±0.77 <sup>a</sup>	7.73±1.28 <sup>a</sup>	7.67±0.98 <sup>a</sup>	7.87±0.74 <sup>a</sup>	7.93±0.70 <sup>a</sup>
Roasted Chicken	7.27±1.28 <sup>ab</sup>	7.47±0.64 <sup>a</sup>	7.20±1.42 <sup>ab</sup>	7.60±0.99 <sup>ab</sup>	7.47±1.13 <sup>ab</sup>
Papaya Salad	7.13±1.19 <sup>ab</sup>	7.47±0.64 <sup>a</sup>	7.53±0.64 <sup>a</sup>	7.40±0.83 <sup>ab</sup>	7.33±0.72 <sup>ab</sup>

However, the natural seasoning was benefit for health because it had functional properties after determinations of antioxidant activity by DPPH assay as vitamin C equivalent, they had the antioxidant activity in the range of 64.42±0.2 to 86.51±1.5 mg.-Vit.-C/100 gm.

## CONCLUSIONS

The local vegetables, herbs and mushroom could be provided as the natural seasoning. The using of this natural product replaced the synthesis product; it could have the potential to develop for healthy seasoning and for enhancing of the tastes and flavor of foods. Finally, the functional properties of these indigenous plants might improve their valuable.



## References

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