



**Northern Upland Development Program
Application for Research Funding
(AgriNet-2)**

**Study on Food Safety by Detection of Contamination in
Food of the Market at Luang Prabang Province**

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Problem Statement

1

Luangprabang province (tourism place)

2

formalin, borax, salicylic acid, pesticide residues, *Ecoli*, *Salmonella* and *Clostridium* contaminations in food → Need to promote food safety for local people and tourists (AEC)

3

Lao people are lack of the knowledge on contamination of food, especially farmer, women and ethnic minority group

4

From farm to market government should be involve

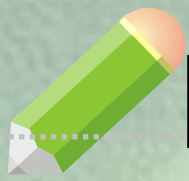
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SPS government should be promote and supported Farmers, consumers and visitors



Objective

1. To study food contamination for different types of food on retail markets in Paxeng and Luang Prabang province.
2. To isolate E. Coli, Salmonella, formalin, borax, salicylic acid, pesticide residue contamination in food.
3. To promote food safety for improved health of local people and tourists.



Research questions

1. Is the level of contamination above standards (for 4 types of food)?
2. In what type of controls is the government involved, between the farmer and the consumer?
3. Which types of food should be controlled and which should be recommended to national and international consumers?
4. Which policies should be drafted for food safety?



Methodology

- Workshops organized with stakeholder in Luang Prabang provinces

- Samples taken from the markets

Between January and February 2016, 407 samples were taken from 2 markets. Different types of food (vegetables, aquatic products, animal products, NTFPs)

- Analysis carrier out at the University laboratory



No	Sample Group	No of samples taken from market	
		LP	PS
	Animal		
1	production	46	48
2	Vegetable	21	19
3	Aquatic	51	30
4	NTFP	18	23

**Animal products (Beef, Pork, Reticulum, Chicken, Duck, and Meatball);
Vegetable (Oranges, Apple, Negrito, tomato, Long bean, cabbage,
Bean sprouts and Cucumber); Aquatic (Pickled, Fish fermented,
Smoke fish, Squid, Shrimp and Tuna); NTFP (Dry mushrooms, Wide
meat and Bamboo fermented)**



Results

Table 1. Contaminate food of Luangprabang district, Luang Prabang province




Group of Sample	No. (%) of positive samples					
	Formalin	Borax	Salicylic acid	Pesticide residues	E. coli	Salmonella
Animal products	0	0	0	0	0	0
Vegetable	0	0	0	76.19	0	0
Aquatic products	0	0	0	0	16.67	50
NTFP	0	0	0	0	0	66.67
Total	0	0	0	66.67 	7.69 	30.77 

Table 2. Contaminated food in Pakxeng district, Luang Prabang province

Group of Sample	No. (%) of positive samples					
	Formalin	Borax	Salicylic acid	Pesticide residues	E. coli	Salmonella
Animal production	0	0	0	0	8.33	8.33
Vegetable	0	0	0	21.05	0	0
Aquatic	0	0	0	0	0	60
NTFP	40	0	0	20	0	75
Total	7.14	0	0	20.83	4.76	33.33



Table 3. Contaminated and products in Luang Prabang provinces

No	Item	No. (%) of positive samples				product source detected
		E. coli		Samalnella		
		LP	PS	LP	PS	
1	Beef	0	0	0	0	
2	Pork	0	33.33	0	33.33	PS
3	Reticulum	0	0	0	0	
4	Chicken	0	0	0	0	
5	Duck	0	0	0	0	
6	Meatball	0	0	0	0	



Table 4. Contaminate food from vegetable of Luang Prabang province

Item	<u>No. (%) of positive samples</u>		product source detected
	<u>pesticide residues</u>		
	LP	PS	
Orange	100	33.33	Xiengkhuang, Vietnam, China
Apple	100	0	China
Rambutan	0	0	
Tomato	100	33.33	Vietnam
Long bean	100	0	Vientiane
Cabbage	100	0	Vientiane, Xiengkhuang
Bean sprout	0	66.67	Pakxeng
Cucumber	33.33	0	Vangvieng



Table 5. Contaminate food from aquatic products in Luang Prabang province

Item	No. (%) of positive samples						product source detected
	Formalin		E. coli		Samalnella		
	Lp	PS	LP	PS	LP	PS	
Pickled fish	0	0	0	0	100	33.33	LP
Fermented fish	0	0	0	0			
Smoked fish	0	0	0	0			
Fresh Squid	0	0	0	0	100	100	Vietnam
Fresh Shrimp	0	0	66.7	0	0	100	Vietnam
DriesTuna	0	0	0	0	0	0	

LP= Luangprabang, PS=Pakxeng,



Table 6. Contamination of NTFPs sold in Luang Prabang province

Item	No. (%) of positive samples								Source of products
	Formalin		pesticide residues		E. coli		Samalnella		
	Lp	PS	LP	PS	LP	PS	LP	PS	
Dried mushroom	0	0	0	33	0	0	0	0	LP
Wild meat	0	0	0	0	0	0	0	100	LP
Bamboo fermented	0	33	0	0	0	0	67	50	LP



Table 7 List of the main food risks to control

No	List of be care for food safety			
	Animal product	Vegetable	Aquatic	NTFP
1	Pork	Orange	Pickled fish	Wild meat
2		Apple		Bamboo fermented
3		Tomato	Squid	
4		Cabbage	Shrimp	
5		Bean sprout		
6				
Remark	E.coli and salmonella	Pesticide residues	Formalin and salmonella	E.coli and salmonella
Source	domistic	China, Vietnam, Thailand and Luangprabang	Almost all from Vietnam, for pickled fish local sources	



Implications for GoL policies & programs

1. Food safety control should be under the responsibility of the Food and Drugs section of the Department of Health.
2. List of the main food risks to control biochemical analyses about food-related risks must used.
3. In the touristic areas, restaurants and hotels should register with the Mark of Green Food Association.
4. Provide budget for research on how consumers can reduce food contamination through food preparation





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