

# THE DETERMINATION OF HEAVY METALS CONTAMINATED IN INSTANT PRODUCT IN COMMUNITY FOR BETTER QUALITY OF LIFE

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**Abstract:** The amount of heavy metals in instant products has been of famous concern because of its toxic when their concentration is more than the allow level. Because of convenience quick to consumers it may have contaminated by substances such as heavy metals, most often attached to the material, packaging and other causes. We have used flame atomic absorption spectrophotometry to determine concentration of As, Cd, Hg and Pb in different type of five samples in instant products in Thewet market. The concentrations of As, Cd, Hg and Pb in all examined semi-finished products were less than the reported standard values (WHO). The results mentioned that the instant products obtained in Thewet market were safety to consumption and make the quality of life of people in community get better.

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**Keywords:** Instant product, Heavy metals.

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## I. INTRODUCTION

Instant products that are consumed on a daily basis. It is popular because of convenience Quick to Consumers It may have contaminated contaminated by substances such as heavy metals, most often attached to the material. Packaging and other causes. The heavy metals copper and iron is a heavy metal that is essential to the body [1-3].

But if given in high doses or for a long time have been accumulated. May cause harm to the health body. Cadmium poisoning Harm the kidneys Bone decay And is the leading cause of cancer Lead is harmful to the brain Nervous system and spinal anemia [4].

Cause memory loss is harmful to the kidneys, the kidneys fail. And death And if they are contaminated with arsenic. Harmful to the digestive system and cardiovascular. CNS Pressing the function of bone marrow Gives hemolysis is severe hepatomegaly. There is a risk of higher death rates of lung cancer. Bladder and kidney

So it all boils down to a detection of heavy metal contamination in the finished products are popular all male. All ages and places For the safety of consumers and improving the quality of life for the better.

In the semi-finished products are sold widely in everyday life. Many different types Semi-finished products play an important role in the daily lives of people more. This is because the living conditions in the West are in a race against time to hustle. The work is more competitive. You need to get up early to work out. Some families require children to eat well on the road to school there.

Especially housewives who have to work outside the home. Usually do not have time to prepare breakfast

for the children.Or family, or even yourself.Production of semi-finished products is one option that has been very popular because it takes time to prepare and the method of cooking is not easy. Take a few minutes to eat it [5-9].

Although sales have been easy to find, but if there is no standard for the production of heavy metals contamination could harm consumers. The heavy metal content, although there is a small amount, but it can be harmful to consumers until death. What precautions in eating instant noodles by noodles paste of rice flour and rice noodles. Do not eat these types of food alone for a long time. The main component is the carbohydrates. When eaten up Without adding meat and vegetables down. The body may lack certain nutrients. Also, do not allow children to eat instant noodles. By not been boiled first. When the noodles into the stomach. It's going to suck the water in the body. The body of water Even if you eat more And not drinking water May cause dizziness or vertigo have. As mentioned above, you can see that even cooked to give consumers the convenience and time-saving cooking. But consumers also need to be careful to eat as well. If you eat food cooked any longer. It may lack certain nutrients, so if possible, when it is finished cooking, eating meat, eggs and vegetables should be added to every time. To get the nutrients at the five categories and the selection it should be noted that since the containers must be in a presentable condition. Do not puncture or laceration. See details on the label Date, month and year of manufacture or expiry or consume before. This is to the health of consumers there.

Also experience low signal noise and high stability. Which currently has mineral analysis tools.High performance elemental analysis such as Inductively Couple Plasma-Optical Emission. Spectrometer (ICP-OES) is an analytical tool. Both qualitative and

quantitative tests as well. Analysts have multiple elements at the same time. (Simultaneous Multielements Analysis) using ICP technique are two parts to produce high temperature plasma with argon gas emissions through torch attached to the transmitter frequency. When the frequency into a magnetic field is induced. The electric Spark with Tesla. A high-energy electrons collide with other electrons. A chain reaction a plasma fraction OES principle makes the transition from the ground state to the substance.

The substance is excited to emit light or spectrum analyzer out. For example, in Indian study heavy metal contamination in black tea leaves grown in the city in six areas. Valparai town in Nilgiris Vandiperiyar town of Munnar and Wayanad town of the city. Karnataka total of 100 samples using AAS analysis found that the volume. Of copper, chromium, nickel, cadmium and lead, in the amount of  $24.07 \pm 2.25$ ,  $4.76 \pm 1.27$ ,  $2.53 \pm 1.01$ ,  $0.14 \pm 0.06$  and  $0.81 \pm 0.32$  mg per kg, respectively [10-11]. For Argentina it has used. Electrothermal Atomic Absorption Spectrometry (ETAAS) and Ultrasonic Nebulization System Coupled to Inductively Coupled Plasma Optical Emission Spectrometry (USN-ICP-OES) Determination of Heavy Metals in the tea leaves. And tablets are made Herbs by random sampling from the market. The sample beverages and dry tea leaves. The analysis not found the amount of chromium and cobalt. Because the value is well below the detection limits as can be. Steel, aluminum, cadmium, lead and vanadium have. But the analysis has been lower than that acceptance by consumers each day (acceptable daily intake), the World Health Organization recommendations and the survey sample digestion with tea. Microwave (microwave digestion) and extracted with hot water (hot water extraction), then measure. Boron is in black tea, green tea, coffee, fruit juice. And roasted coffee beans found in large quantities. 3:21 to 9:25, 3:54 to 5:52, from 2.71 to 27.7, from 13.3 to 21.3, and from 7.57 to 17.5 mg per kg, respectively [22-26]. Studies on the absorption of Lead from soil into the tea found that soils with high acidity makes tea tree can absorb lead in soil. It was also found that increasing the alkalinity to the soil by adding calcium carbonate to pH. An increase of one unit can reduce the absorption of lead into the tea percent of 20-50.

In the work of research A. Boos [12] and the mission of the synthesis of silica using a square and reduce surface tension of a layout, and found that the silica solution was perfectly prepared for osteoporosis is a true 3.90 NM silica can be this type of juice Cu (II) to be 0.20 mol/kg in the NaOH solution NaNO<sub>3</sub>, which make the situation for the right to extract Co (II) and Ni (II) with solutions, and it was found that the silica that can extract Co (II) and Ni (II) is 0.30 and 0.32 mol/kg, respectively.

RattanaMaha Chai [13], study the absorbing heavy metal with some kind of local material such as carbon

ashes, violin bows, bamboo pulp and fiber corn. It was found that lead is absorbent material in most nearly all kinds of settings, there is a leader in the range of 30-70% by weight per weight copper, Cadmium, zinc, in the range 2-10% and nickel-chrome bug of sunflower less than 1% when compared to the absorption of metal materials in chronological order are as follows: coconut fiber and silk has the ability to absorb similar metal heavy metal removal when mixed together, found that there are ways a persistent performance in the disposal method is better than non-persistent for about 5 times, but when you put the two together, using the most appropriate material ashes.

Mustafa [14] study to get rid of heavy metal waste, using egg shells and shell black ash, using egg shells and ashes removes cadmium, lead experiment, found that the column performance in elimination of heavy metal and the pH to eliminate Cadmium using egg shells. pH is a good 5-6, which is 99.75 % removal efficiency when using egg shells around 3.28 kg and lead by using the disposal ash black pH is an appropriate 3. Performance in the lead-up to 99.85 % removal when using black ash shell in the amount of 4.58 kg heavy metal removal, it is also dependent on the rate of filter with filter if the slow rate will be high-performance and have been in use for a long time. Porntip study the absorption efficiency is dependent on temperature burned time and time suitable to absorb the shell with the controls the amount of oxygen will be control oxygen it was found that at a temperature 550 degrees Celsius for 2 hours it takes to absorb 3 hours, and there is effective in absorbing the best burned at a temperature 700 degrees Celsius for 3 hours it takes to absorb and then 48 hours to study the influence of the intensity and pH has an effect on the intensity of absorption was found that 500 mg per liter both of which are effective in absorbing the best pH has an effect on the absorption of pH, it was found that the capacity of white and black is 0.23 and 0.21 mg, respectively.

In this research, It is aimed at the study of heavy metals in the instant product by AAS.

### The purpose of research

To study the amounts of the heavy metal in instant products.

## II. DETAILS EXPERIMENTAL

### 2.1. MATERIALS AND METHODS

#### A. EQUIPMENT

Atomic Absorption Spectrophotometer, the company GBC model AVANTA (Australia)

- filler paper No. 1 (Whatman)
- Furnace model Nabertherm (Germany)
- Crucible
- Micropipette
- glassware basic in operation room

### B. CHEMICALS SUBSTANCE

- As(aq) 1000 ppm [Spectracer UK Ltd]
- Cd(aq) 1000 ppm [Merck K GaA]
- Hg(aq) 1000 ppm [Merck K GaA]
- Pb(aq) 1000 ppm [Spectracer UK Ltd]
- Conc. HNO<sub>3</sub> (68-70 %) [BAKER ANALYZED]
- 0.01 M HNO<sub>3</sub>

### C. SAMPLE PREPARATION

This research prepared standard solution of heavy metal of 4 kinds : As, Cd, Hg and Pb to have concentration as follow:

- 0.2, 0.6, 0.8, 1.5, 1.8 ppm for As
- 1.0, 3.0, 5.0, 10.0, 15.0 ppm for Cd
- 1.0, 3.0, 5.0, 10.0, 15.0 ppm for Hg
- 2.0, 5.0, 10.0, 15.0, 20.0 ppm for Pb

The Semi-finished products were collected from Thewet market. Dried samples were dried at room temperature for two weeks. The dried samples were digested as following: 1.0 g of each was dissolved in 1M nitric acid (10 ml), boiled to complete the dissolution and filtrated. The obtained precipitate was washed with nitric acid (1 M) and transferred to 25 ml volumetric flask and fill up to the level with de-ionized water and then analyse with AAS.

### III. RESULT AND DISCUSSION

The results of the experiment were shown as follow: The accepted values of the concentrations of As, Cd, Hg and Pb as reported in the World Health Organization (WHO) were presented in Table 1.

**Table 1: Levels of heavy metals as reported in WHO**

Heavy metal	Concentration (mg/kg)
As	0.015
Cd	0.030
Hg	0.025
Pb	0.050

The concentrations of As in sample were presented in Table 2.

**Table 2: The concentration of As in sample**

No.	Name	Concentration (mg/kg)
1	Sample A	0.003
2	Sample B	0.005
3	Sample C	0.010
4	Sample D	0.007
5	Sample E	0.008

It was found that the concentration of this metal (As) was ranged from 0.003 mg/kg to 0.010 mg/kg, which means that, the concentrations of As in all examined instant product were less than the reported level shown in Table 1.

**Table 3: The concentration of Cd in sample**

No.	Name	Concentration (mg/kg)
1	Sample A	0.019

2	Sample B	0.007
3	Sample C	0.011
4	Sample D	0.015
5	Sample E	0.016

The results of analysis indicated that the concentrations of the Cd in all examined instant product varied from 0.011 mg/kg to 0.019 mg/kg as shown in Table 3 and was less than the standard value.

**Table 4: The concentration of Hg in sample**

No.	Name	Concentration (mg/kg)
1	Sample A	0.009
2	Sample B	0.007
3	Sample C	0.005
4	Sample D	0.015
5	Sample E	0.016

The results of analysis indicated that the concentrations of the Hg in all examined instant product varied from 0.007 mg/kg to 0.016 mg/kg as shown in Table 4 and was less than the standard value.

**Table 5: The concentration of Pb in sample**

No.	Name	Concentration (mg/kg)
1	Sample A	0.035
2	Sample B	0.020
3	Sample C	0.031
4	Sample D	0.032
5	Sample E	0.015

Table 5 present the concentration level of Pb in all examined instant samples. The obtained results from this table indicated that the concentrations ranged from 0.015 mg/kg to 0.035 mg/kg. These values were lower than the accepted values reported in Table 1.

**Table 6: The summary of the concentration of heavy metal in sample**

No.	Name	Concentration (mg/kg)			
		As	Cd	Hg	Pb
1	Sample A	0.003	0.019	0.009	0.035
2	Sample B	0.005	0.007	0.007	0.020
3	Sample C	0.010	0.011	0.005	0.031
4	Sample D	0.007	0.015	0.015	0.032
5	Sample E	0.008	0.016	0.016	0.015

The summary of concentration of heavy metal in all examined green teas were presented in Table 6. It is very clear that these values are less than the reported values which indicated in Table 1.

### CONCLUSIONS

The amounts of heavy metal in all types of Semi-finished products were lower than the reported values of the WHO. This result confirmed that all type of

green teas obtained from market were safe to consumption for long live living (clean food good health). From this experiment it was concluded that 5 types of instant product can be consumption with safety and to improve the sustainable quality of life in the community.

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