



Evaluation of Some Nutritional Values and Antioxidant Activities of Dried Tea Leaves in Seasonally



Chaw Su Hlaing*, A Mar Wint, Ohn Mar Aye, Myo Thida Hteik

Department of Chemistry, Taunggyi University, Southern Shan State, Myanmar

Abstract Tea Leaf is one of the traditional food in Myanmar. It is eaten as well as drunk with two main forms which are dried tea leaf or Lahpet chaw and wet tea leaf or Lahpet so. Tea leaves can be picked starting from April until October. At Namhsan area, Northern Shan State in Myanmar, tea leaves are generally divided into six kinds depending on the plucked season. There are "Shwephi-Oo", "Shwephi-Hnaung", "Khakan-Oo", "Khakan-Hnaung", "Kha-Naing", and "Kha-Hawt" or "Hnin Tet". In this study, some nutritional value and antioxidant activities of six kinds of dried tea leaves in Namhsan region were evaluated by the aiming of which kind of dried tea leaves have the best quality for consumers. The analyses included examination of the dried tea leaves were their nutritional value (carbohydrate, protein, and amino acids), assessment of selected minerals, caffeine, catechin mixture and total ash. From the observed results, dried tea leaves in Namhsan region were rich in mineral contents (5.48-2.33 mg/kg of Ca, 1.94-1.40 mg/kg of Zn, 1.77-1.06 mg/kg of Fe and 8.06-21.06 of Mn), 7.39-4.20 % total ash and high antioxidant activities (16.17-58.79 IC₅₀ value of DPPH scavenging assay) were found. Based on the studied nutritional values and antioxidant activity results, Shwephi-Oo Lahpet chaw was confirmed that the best quality.

Keywords Dried tea leave, nutritional value, antioxidant activity, phytochemical screening, free radical scavenging, AAS

INTRODUCTION

Tea is grown in different states of Myanmar, mainly in Shan state. The best quality and major cultivation are in Namhsan region, Northern Shan State. The total tea plantation area is around 70,000 hectares with an annual production of 78 million Kg green leaves. Namhsan area is a mountainous region with deep slope that forms a natural drainage system, vital for tea plantation. There are generally six kinds of tea seasonal names in use for the tea leaf. These are "Shwephi-Oo" if the tea leaf is picked 3rd week of March to 2nd week of April, "Shwephi-Hnaung" if it is picked 3rd week of April to 2nd week of the May, "Khakan-Oo" if it is picked 1st week of Jun to 2nd week of July, "Khakan-Hnaung" if it is picked mid-July to 2nd week of August, "Kha-Naing" if it is picked end-August to end-September, and, "Kha-Hawt" or "Hnin-Tet" if it is picked 1st October to end-November. The period of these seasons may be differed in locally. In this study, dried tea leaves were examined by dividing the six kinds based on their plucked periods.



OBJECTIVES

- To assess the nutritional values and antioxidant activities of dried tea leaves in seasonally
- To inform the kind of best quality dried tea leave

MATERIALS AND METHODS

Sampling

Tea leaves were plucked in one of the tea farms from Zayangyi village in Namhsan region starting from 1st April, 2018 to end-November, 2018.



Methods

Nutritional contents of tea leaves were examined by preliminary phytochemical screening method and the selected mineral contents (Ca, Zn, Fe, and Mn) were analyzed by atomic absorption spectrophotometry (AAS). Antioxidant activities of dried tea leaves were evaluated by the DPPH free radical scavenging assay. Total ash contents were determined by ignition method. Caffeine and catechin mixture (flavonoid) were extracted by using chemical reagents such as dichloromethane and chloroform. All experiments were performed in the laboratory of Department of Chemistry, Taunggyi University, Southern Shan State, Myanmar.

RESULTS AND DISCUSSION

Table 1 Preliminary phytochemical screening of six kinds of dried tea leaves

Sample	Alkaloid	Carbohydrate	Glycoside	Protein and amino acids	Flavonoid	Phenolic compounds	Tannins
Shwephi-Oo	+	-	+	+	+	+	+
Shwephi-Hnaung	+	-	+	+	+	+	+
Khakan-Oo	+	-	-	+	+	+	+
Khakan-Hnaung	+	-	-	+	+	+	+
Kha-Naing	+	-	-	+	+	+	+
Kha-hawt	+	-	-	+	+	+	+

Table 2 Some mineral contents and antioxidant activities of six kinds of dried tea leaves

Sample	Amount of parameters						Antioxidant activity (DPPH scavenging assay, IC ₅₀ value)
	Ca (mg/kg)	Zn (mg/kg)	Mn (mg/kg)	Fe (mg/kg)	Total Ash (%)	Caffeine (%)	
Shwephi-Oo	5.4764	1.5873	21.0559	1.3953	7.39	0.200	16.17
Shwephi-Hnaung	5.4413	1.5079	15.1911	1.3514	6.60	0.075	29.40
Khakan-Oo	3.0048	1.8865	10.8227	1.7661	5.79	0.100	
Khakan-Hnaung	4.4226	1.4070	8.0566	1.0664	5.39	0.100	
Kha-Naing	3.30612	1.9409	11.6994	1.7569	6.60	0.125	
Kha-hawt	2.3382	1.7858	11.1704	1.5577	4.20	0.075	58.79

By observing the results in Table 1 and Table 2, some nutritional values, the selected mineral contents, total ash, caffeine content and antioxidant activity were found higher rich in Shwephi-Oo than another five kinds of dried tea leave apart from Zn and Fe contents.

CONCLUSION

From the experimental results, six kinds of dried tea leaves in Namhsan region have valuable nutritional values and high antioxidant activity. Among them, Shwephi-Oo is generally regarded as the best quality kind of tea leave for consumers.

REFERENCES

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