

EFFECT OF THE FLAVOR COMPONENT THE PU-ER TEA IN AGING PERIOD

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Summary

Pu-er tea a kind of post-heated fermented tea is produced at Yunnan province in China.

Fungi, such as *Aspergillus* and *Penicillin* and others were found in Pu-er tea.

This study was carried out about changes of the flavor components by aging period of the Pu-er tea. The sample were used for aging 1~5 years and before aging of the Pu-er tea of China. It was showed that OD at 380nm of infusion aging for 5 years were higher than before aging of the Pu-er tea. The amino acid content in before aging of the Pu-er tea were higher than after one and then decreased. Especially, the decrease of the catechin was remarkable, but the gallic acid increased. Almost tea components were decomposed by microorganisms.

Keywords

Pu-er tea Flavor Catechin

INTRODUCTION

Tea is currently classified into two main groups: unfermented and fermented. Fermented tea is subdivided into two groups, one being pre-heated fermented tea (black and oolong teas) and the other post-heated fermented tea. Post-heated fermented tea is subdivided into three groups: one is tea fermented by fungi under aerobic conditions, for example, a black tea fermented by fungi in China, and Toyama-kurocha (Toyama Pref... Japan): the second type is tea fermented by bacteria under anaerobic condition, for example, Awa-bancha (Tokushima Pref., Japan), Miang (northern area of Thailand, northern area of Rao R.D.R.), Laphet-so, (north-eastern area of Myanmar) and Suancha I (Xishuangbanna, Yunnan China) : the third group is tea fermented in two steps by fungi and bacteria under aerobic and anaerobic conditions, for example, Goishi-cha (Kochi Pref., Japan), Ishizuchi-kurocha (Ehime Pref., Japan).

Japanese post-heated fermented teas are used for drinking. However, Miang, Laphet-so and Suancha are eaten like pickles.

In previously, we have investigated some chemical components and the main microorganisms which are concerned in the fermentation of Japanese post-heated fermented teas. The present paper reportes the flavor components in Pu-er tea. Pu-er tea of the region limitation in the ripening process was examined.

Material and Methods

Samples

Pu-er teas produced in Shuang Jiang, Yunnan, China in December 2002 were used.

The manufacturing process of Pu-er tea was shown in Fig.1. The Pu-er tea used aging period

1~5years.

Determination analysis of Pu-er extracts color.

Pu-er tea extracted was prepared in the same manner as described in the above sensory test.

The filtrate was measured at 380nm.

Analysis of polyphenol content

The polyphenol contents were determined by the method of Iwasa *et al*¹⁾.

Analysis of catechin

Catechins were analyzed according to the method of Ikegaya *et al*²⁾..

Analysis of amino acids

Amino acids were analyzed according to the method of Tsushida *et al*³⁾.

Analysis of sugar

Sugar were analyzed according to the method of Ikegaya *et. al*⁴⁾.

Analysis of the soluble component

Soluble component were analyzed according to the method of Ikegaya *et. al*⁵⁾.

Result and discussion

Pu-er tea was molding green tea ,however, it becomes black color was after molding. In addition, the black was the result with the long aging time.

Composition of pigment

On the pigment composition, the absorbency is though higher than the before molding, and it tends to gradually of the decrease back molding post-one year. Though the polyphenol content was molding previous aging time about 20%, it decreased to 5.6% by molding thing. The polyphenol content increased at 7.4%, when the storage time increased.

Composition of catechin

The composition of the catechins in Pu-er tea is illustrated in Table 1.

Higher contents of total catechins were found in Green tea. Green tea was contents of four major catechins, *i.e.* (-)-epigallocatechin gallate (EGCg), (-)-epicatechin (EC), (-)-epigallocatechi (EGC),(-)-epicatechin gallate(ECg). In addition, those teas contented the heat-converted catechins, *i.e.*(-)-epigallocatechin-3-gallate,(-)-catechin-3-gallate,(-)-gallocatechin in a small amount. Somewhat large amounts of the heat-converted catechins were observed to appear in china green tea. There was the increase of the setting gallic acid by the mold.

It was features that there were small -EGCg of the main catechin. The -ECg increases on the catechin content.

Composition of sugar content

The sugar content was green tea 6.7%, it was 2.2% after the molding. The sugar content decreased to about one third by doing the molding. The result of analyzing by the high performance liquid chromatography and the segregation sugar was the sucrose.

Composition of amino acids

The composition of the amino acids in Pu-er tea is illustrated in Table 2.

The amounts of amino acids decreased with proceeding of process, however, chain branched amino acids, especially isoleucine, were increased during the aerobic fermentation.. The amounts of amino acids, especially of proline, aspartic acid, in Pu-er tea. The result was equal the other post-heated fermented tea, showing the increase in branched amino acid in the

manufacturing process. However, the amino acid increased in storage time fifth.

Variation of the soluble component

The composition of the asoluble components in Pu-er tea is illustrated in Fig.2 .

It gradually increased as a soluble component from the many fourth years on the first year.

The soluble component showed the tendency in the increase under saving of the tea.

Reffences

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Green Tea
 Steamed
 Plasticed
 Aging
Pu-er tea

Fig.1.Manufacturing process of Pu-er tea

Table 1. Catechin contents of Pu-er tea

	1year	2year	4year	5year
(-)-EGC	0.04	0.06	0.09	0.09
(-)-EC	0.12	0.13	0.23	0.25
(-)-EGCg	0.01	0.03	0.03	0.08
(-)-ECg	0.05	0.11	0.05	0.18
(-)-Gallic acid	0.31	0.19	0.41	0.6
(-)-gallocatechin	0.09	0.13	0.08	0.14
(-)-gallocatechin-3-gallate	-	0.01	trace	0.02
(-)-catechin-3-gallate	-	-	0.01	0.01
Total	0.62	0.66	0.9	1.37

(%)

Table.2 Contents of amino acid in Pu-er tea

	1year	2year	4year	5year
Asp	50.5	28.8	62.4	107.1
Thr	8.2	3.6	3.7	9.9
Ser	13.8	7.2	10.4	19.2
Glu	92.1	57.6	90.2	127.3
The	71.4	42.9	149.1	238.5
Pro	36.8	28.5	47.6	70.6
Gly	9.1	6.7	9.2	13.6
Ala	30.6	12.6	23.5	39.9
Val	65.7	34.0	71.3	76.9
Cys	200.0	69.3	77.0	95.5
Met	-	-	1.4	1.6
Ile	54.5	47.4	95.3	106.6
Leu	42.9	12.7	32.8	40.7
Tyr	30.8	12.8	23.2	26.3
Phe	21.2	9.8	23.0	37.8
GABA	39.8	37.2	26.0	54.9
Lys	39.7	12.2	32.5	45.3
His	48.2	37.2	45.5	65.3
Arg	43.8	14.8	41.7	59.0
Total	899.1	475.3	849.6	1236.0

(mg/100g)

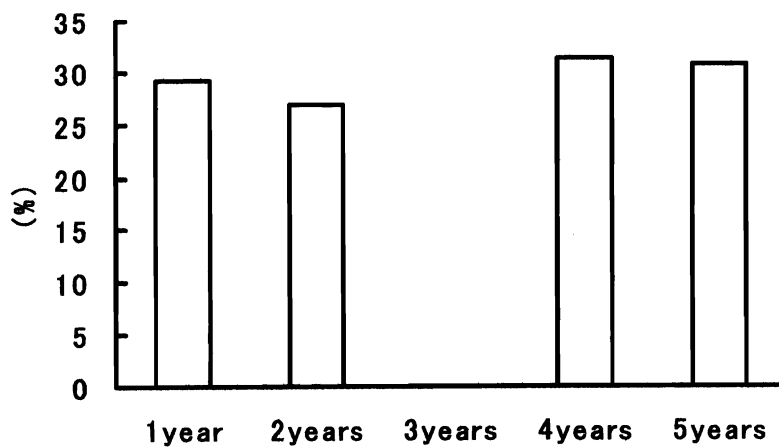


Fig.2. Contents of soluble components in Pu-er tea