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Chinese tea Pu- erh.

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ABSTRACT

Currently, the Russian market is actively developing Pu-erh tea sector. The manufacturer positions this product as an exclusive and elite. However, the Russian consumer insufficiently informed about the characteristics of Pu-erh tea, and, as a rule, isn't able to estimate its exclusivity. The aim of this article is to study the market range, the chemical composition and characteristics of the comparative quality Pu-erh tea produced in China. The regularities between physico-chemical parameters identified in volatiles and flavor properties of Pu-erh tea.

Keywords: Tea, Pu-erh, fermentation, organoleptic indicators, taste, extract.

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INTRODUTION

Historically, the Yunnan Province of China has a rich past of tea, being the place where Pu-erh tea was first discovered and produced, as well as being famous for its old wild tea-trees.

The Yunnan Province is the most south-western province of China, it is located between 97°39'-106°12' east longitude and 21°09'-29°15' north latitude, in the southern part of the northern hemisphere.

When saying "Yunnan Pu-erh tea", we are talking about a large number of tastes and shades, geographical features and technologies of production of Pu-erh tea. This Yunnan Pu-erh tea is grown on 12 well-known tea mountains, each of which has its own history, its own characteristics, as the tea, collected there, has its own flavors, colors, aroma, and medicinal properties. That geography, the specific location of a tea garden to a large extent determines the quality of tea harvested there. Indeed, mountains of Yunnan made the tea cultivation so famous there. That is why it is important to understand where the tea was collected and what are its special qualities.

Its unique combination Pu-erh tea obtained due to Yunnan warm and humid climate and a great variety of tea bushes and the tea-trees. Tea leaves, flushes and tips in these parts are one of the largest among all species. Tea, harvested from wild tea plants, has more varied taste and aroma than other teas. Compared to black baikhovi broken-leaf teas and fannings teas Yunnan whole leaf teas have on 30-50% more polyphenols and catechins. The best Pu-erh tea is collected from the tea-trees, not tea bushes. The older the tree, the more exquisite is the Pu-erh tea. There are only a few thousand years ancient tea trees in the Yunnan Province; that tea is particularly valued.

The feature of the production of Pu-erh tea is the slow fermentation that makes the taste of raw Pu-erh richer. The peculiarities of the fermentation of raw Pu-erh can be attributed only to the long wait: raw Pu-erh have a taste, at best, after two years of maturing, and the peak of taste falls on 5-15-25 years of storage. Better suited to withstand is the pressed Pu-erh, made from raw materials (below 3-4 leaves) or from old tea-trees` leaves.

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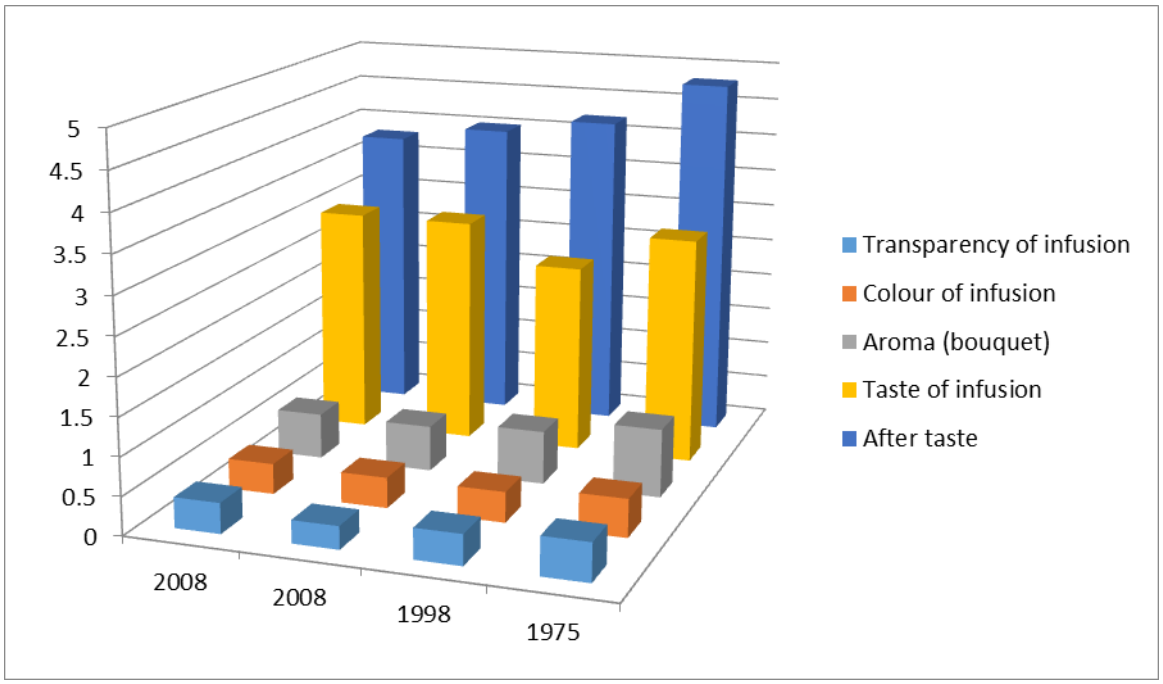
From general flavor characteristics can be distinguished the taste of smoke, the taste of dried fruits and much bitterness and astringency. Color of welding, depending on the length of exposure, varies from light yellow (young Pu-erh) to light brown (aged Pu-erh).

There is no accurate and clear terminology in organoleptic quality evaluation of Pu-erh. As a rule, everybody uses own images describing its feelings. At the assessment of tea (for example, at realization), many ambiguities can arise. Taking into consideration the fact that all people have own feelings, there turns out either inexact vision or absolutely different understanding. In order to define whether the tea is of a good or bad quality, whether it is worth buying, drinking or collecting it, previously the tea is infused with several infusions, using water of different temperature and necessarily only one tea leaves. If every time from infusion to infusion tea's colour, aroma and taste change slightly, and there is a constant bouquet – then it is possible to call such tea good Pu-erh.

Researches of four grades of black tea Pu-erh of various years of production were conducted: 1975, 1998 and 2008 (two samples). Three samples had a form of a binch – now the most widespread form of tea Pu-erh, it is executed in the form of a pancake. One sample (2008) was presented in the tableted form.

There were explorations of qualitative and quantitative structure of the aromatic components of four grades containing in two studied tea samples.



The first sample appeared to be tea Pu-erh black 1975 which received the highest complex rate of quality on organoleptic indicators (9.7 points). Tea Pu-erh black 2008 was the second sample.

	Organoleptic indicators of quality					
	transparency of infusion	colour of infusion	aroma (bouquet)	taste of infusion	aftertaste	general point
Pu-erh black 2008	0,5±0,1	0,5±0,1	3,0±0,1	4,8±0,3	0,9±0,1	9,7
Pu-erh black 1975	0,3±0,1	0,4±0,1	3,0±0,1	4,0±0,3	0,6±0,2	8,3

This sample got a GPA on the organoleptic indicators of quality (8,3 points).

With the help of hromatographic division with mass detection the following classes of chemicals have been identified: organic acids, furana and their derivatives, air, carbonic acids, phenols and their derivatives, pirazina and their derivatives, pirrola, ketones, alcohols and alkanes.

Contents and composition of aromatic substances in mature and young Pu-erh is different. In the post-fermented tea Pu-erh the basic aromatic substances are linalul, oxides of a linalul, terpineol and other terpenes, 1,2,3-trimetoksibenzol defines special taste of mature tea, 1,2-dimetoksi-4-methylbenzene gives a typical smell of a maturity and mustiness. Aromatic substances, in mature tea Pu-erh, are 25% higher, than in young.

Tab. 10:**The qualitative and quantitative content of the aromatic components identified in tea Pu-erh**

№	Name of connection	1st sample		2nd sample	
		area of peak	% of total area	area of peak	% of total area
1	Ethylbenzene	1973032	3,08	1885138	11,9
2	Isopropyl acetate	8690298	13,56		
3	1,1-Diethoxybutane	1713126	2,67	934831	5,9
4	Amylethyl air	277221	0,43	82356	0,52
5	Benzole aldehyde	504612	0,79	207221	1,31
6	2,4-geptadiyenal	371986	0,58		
7	Glycerine	27867067	43,5	486591	3,07
8	Alkane	626432	0,98	387610	2,45
9	Benzethyl aldehyde	346191	0,54	47096	0,3
10	Ethylhexanol	592667	0,92	58079	0,37
11	3,5-Oktadiyenon-2 isomer	150334	0,23		
12	5-Eteniltetragidro 2 furanmethanol	557773	0,87	126809	0,8
13	3,5-Oktadiyenon-2 isomer	150807	0,24		
14	5-Eteniltetragidro 2 furanmethanol isomer	789550	1,23	265432	1,68
15	Decanal	205441	0,32		
16	Beta Linalool	243215	0,38		
17	Alkane	1103774	1,72	781376	4,93
18	1,2-Dimetoksibenzen	339599	0,53	119707	0,76
19	3,5-Dimetilgeksen-2	73626	0,11	30748	0,19
20	Izooktanol	79766	0,12	24692	0,16
21	Epoksilinalool	895738	1,4	430937	2,72

22	Menten-1-8-ol	594697	0,93	174767	1,1
23	Dodekanal	71682	0,11	62211	0,39
24	Alkane	1008767	1,57	721258	4,55
25	Metilsiringol	946869	1,48	371528	2,34
26	2,4-Dekadiyenal	111633	0,17	54068	0,34
27	Alkane	425920	0,66	294763	1,86
28	Heptyl air of butane acid	131212	0,2	64967	0,41
29	Alkane	227110	0,35	163127	1,03
30	3-Karen	168616	0,26	70592	0,45
31	4,8-dimethyl-1,7-nonadiyenol-4	126042	0,2	56145	0,35
32	Alkane	295262	0,46	297702	1,88
33	Tetradecanoic acid	67074	0,1	199106	1,26
34	Alkane	146012	0,23	32723	0,21
35	Phenylacrylic acid	57894	0,09	98614	0,62
36	Hexadecanoic acid	206585	0,32	124886	0,79
37	Dioctylphthalate air of phthalic acid	183183	0,29	4051957	25,55
38	Octadecanoic acid	7017366	10,95	2747380	17,34
39	8,11,14- Eicosatetraenoic acid	4522682	7,06	197131	1,24
40	Eicosenic acid	238025	0,37		

From the table we can see that some taste-aromatic substances which are contained in a sample No. 1 are absent in a sample No. 2. The main component of the taste-aromatic substances in the first sample are the following connections: isopropyl acetate, 2, 4-geptadiyenal, glycerine, 3,5-Oktadiyenon-2 isomer, decanal, beta linalool, dioctylphthalate, eicosenic acid.

Probably, the presence or absence of these compounds in a total amount of flavouring substances indicates the presence of biochemical and oxidative processes occurring in tea during the process of fermentation.

In sample №1 substances that are present in concentrations which form flavour and taste of tea were identified. For example, isopropyl in certain concentrations enables to smell the melon and 2.4 geptadienal gives shades of smoked flavour of the tea sample. Glycerine is a compound which is produced by fermentation as a secondary ingredient of the process gives the aroma and taste sweetish tone and increases viscosity, which is felt on the palate and is observed as a sag similar to the "legs" of aged cognac on the plate when gently shaking the sample. 3.5 Oktadienon-2 isomer gives the mushroom shade taste to the tea, with the participation of microorganisms appeared from the storage in the ground. Decanal characterizes the citrus hue of the tea composition. Beta-Linalool – terpinoyd is one of the essential oil components gives the tea floral tone. Eicosanoic acid gives the tea extra strength and earthy-buttery flavour.

In the sample №2 a high content of DBP was revealed that gave smoked notes to the less aged tea. Thus, the organoleptic features of Pu-erh tea are quite correlated with allocated aromatic compounds formed during prolonged fermentation.

When buying Pu-erh tea it is important to pay attention to the following label. The front side of the Pu-erh label usually consists of inscriptions that can be divided into certain parts: the name, form, plant logo - its trademark, plant address, as well as weight and sort. Fig. 1.

Figure 1. Pu-erh tea label.

All of these studies Pu-erh tea were held in order to familiarize the Russian consumer with one of the most exotic Chinese tea in the first article of a series of planned articles on rare types of products entering the Russian market.

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