

Physiological Effects of Tea - Jitters

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This report will answer two questions:

- 1) What do most people mean when they say "jitters"?
- 2) What causes "jitters"?

Sometimes people experience "jitters" when drinking tea. This type of "jitters" is different from "coffee jitters" where people report experiencing shaky hands, increased heartbeat, bursts of energy. The experience of "jitters" from tea is somewhat different from "coffee jitters" as people tend to ask why they get jitters from tea (examples [here](#), [here](#), and [here](#)). Other times, you might hear people feeling "tea drunk", a "buzz", or a kind of "high" when drinking tea.

Some broad distinctions can be offered to better explain what we mean when people talk about physiological or sensory experiences with tea.

Sometimes the sensation of feeling jitters is more directly related to a caffeine rush. Some people have reported feeling shakes, dizziness, cold sweats, and heart palpitations. These kinds of sensations can happen when one is drinking tea on an empty stomach or from excessive amounts of drinking tea. In addition, people often mention caffeine and L-theanine in discussions about tea and physiological responses.

L-theanine is a non-protein amino acid that is found naturally in tea plants that contributes to the taste profile of tea (Vuong, 2011). The amount of L-theanine can vary depending on the type of the tea and brewing time (Keenan et al., 2011). The effects of L-theanine are associated health and cognitive benefits, and is often cited as a factor for feeling relaxed, but alert (Vuong, 2011). L-theanine has also been found to counteract the negative effects of caffeine (Vuong, 2011) which may explain why individuals do not often report feeling negative effects when drinking tea.

The reason for why some might experience jitters could be physiological imbalances between caffeine and L-theanine. The dosage amount of L-theanine needed to counter effects of caffeine is unclear. High amounts of L-theanine is not easy to achieve. For example, 150 - 250 mg of L-theanine would require drinking nine and 15 cups of tea per day (Vuong, 2011). Also, caffeine levels of a tea may depend on the geographic region and whether roasting processing was involved (Fu et al., 2024).

In other instances, people might be talking more about how the tea makes them feel or the

“energy” of tea. This sensation may sometimes be described as feeling “heavy”, “drugged”, “euphoria”, “body feel”, “a high”, “blood flowing through the veins” or “getting smacked by a tea that’s too strong”. In a more poetic sense, the sensation can be described as an unspeakable sense of openness (Ma, 2023). This can be referred to as chaqi [pinyin: chá qì simplified: 茶气].

What is chaqi? [The idea of “Chaqi” sounds less scientific and more mystical in the way the concept is sometimes described. The idea of “chaqi” being mystical or scientific is a separate issue for the time being. From a western perspective, it’s easy to overthink the word having more connotations than it should.] No single definition can probably capture this concept, but some balance must be maintained. Too strict a definition means loss of information that contribute to experiences of understanding chaqi. Too loose a definition does not help either because anything can be considered chaqi. Language matters too because of the limitations in being able to translate descriptions of sensations across languages (e.g., Chinese to English). [I do not discuss further, but Traditional Chinese Medicine (TCM) cannot be ignored because the idea of 气 is rooted in TCM. TCM also influences how tea is discussed as some might say green tea is “cold” and fermented/oxidized tea is considered “hot”.]

Discussions about what is and what is not chaqi are not always clear. The experience of chaqi can be somewhat subjective because individuals will have different responses to the same tea. Two points of consideration can help clarify what people mean when saying statements like “this has good chaqi”.

The first point of consideration is that chaqi can refer to the strength or power of the tea. These kind of descriptions are more directly related about the tea whether it is talking about the aroma, taste, liquor, and mouthfeel. They talk more about the quality of the tea itself. For example, an experienced tea drinker would probably understand the statement “a fresh Bulang is more aggressive than a Yiwu” or “Yiwu is more relaxing than a Bulang.” Both example statements are more commonly overhead in China in which chaqi is meant to refer to the body feel of the tea.

The second point of consideration is that chaqi can refer to the effects of tea consumption. This can refer to a change in mental state, such as feeling perceptive, meditative, or alert. This can also refer to changes in one’s physical state, such as sweating, blood rush, or increased heart rate. These effects are more dependent on the individual and can sometimes seem more subjective.

What are factors that contribute to why some people report difference sensation experiences?

The first is that certain types of teas seem to provide more chaqi than others. Sheng pu’er, shu pu’er, yancha, and dancong are types of teas often discussed in relation to chaqi. For example, it’s more common to hear about the chaqi from a pu’er tea than from a green tea. For example, a good aged sheng pu’er is sometimes described as being heavy, relaxing, and in a state of sedation. In contrast, a young sheng pu’er can be considered more “wirey” or “jittery” likely because these teas are fresh off production and have not had sufficient time to undergo years of fermentation. Some research also suggest chemical differences between sheng and shu pu’er due to processing differences and changes in bioactivity from the aging process (see Wang et al., 2022).

Second is whether the material is sourced from older or younger tea trees. Ancient tea trees [No clear standard definition, but generally refers to tea trees 100+ years.] then to have more chaqi

than terrace teas [Generally refers to teas planted at terraced or leveled land on mountain sides. These are cultivated tea bushes and typically planted neatly.]. One reason for the difference is because ancient tea trees have developed roots deep in the ground that have access and can absorb minerals and nutrients that contribute to the complex taste reported in tea (Hung, 2016). The same ancient tea trees are rarely disturbed by humans unlike terrace teas that require more intervention from humans. The age of the tree seems to explain why teas that use younger material don't provide as much body feel compared to teas that use older material.

In one study, experts could identify which pu'er samples were from ecological forests or terrace production stating the former has more of a bitter taste (Ahmed et al., 2010). When analyzing the phytochemicals of pu'er, the levels of Total Catechin Contents (TCC) and Total Methylxanthine Contents (TMC) were different depending on source material. In general, pu'er samples from ecological forests had higher mean TCC levels than pu'er samples from terrace plantations (Ahmed et al., 2010). Pu'er samples from terrace plantations had higher mean TMC levels than pu'er samples from ecological forests (Ahmed et al., 2010). Overall, these results demonstrate differences in chemical composition between teas from ecological forests of tea plantations.

The difference in chemical composition probably explain why people have different experiences when drinking pu'er tea. The sensation of only experiencing jitters or feeling caffeinated might stem from drinking pu'er made from terrace plantations that usually have low levels of total catechin and high levels of total methylxanthine which include caffeine. If one experiences a sort of "high" or chaqi, this might stem from pu'er made from ecological forests that usually have high levels of total catechin (Ahmet et al., 2010).

Summary

Defining people's physiological or sensory experiences with tea can be tricky for a number of reasons.

First, people may not have the sufficient vocabulary or experience to delineate differences, especially when much of the tea culture is built around training and defining taste and sensory experiences. The notion of articulating these experiences with specific terminology can be seen as too abstract or pretentious (Ma, 2023). In addition, concepts may not be easily translated or understood across languages which can create difficulties in describing these experiences.

Second, what is "jitters" can depend on what physiological or sensory experiences we are referring. At a basic level, one might define it as something more akin to a "caffeine rush" in which they are overstimulated. In another sense, one might be referring to the "high" or "buzz" that can be more abstract but often has more positive sensory associations. Still, in other cases, one might be talking more directly about the tea itself in terms of its strength. These descriptions are not always in isolation and can sometimes overlap in trying to describe the sensation.

Third, what factors affect these sensory experiences? Drinking tea on an empty stomach or drinking too much tea can contribute to negative sensory experiences. The type of tea can matter as certain teas like sheng pu'er, shu pu'er, yancha, and dancong lend to sensory experiences. In the case of pu'er tea, the source material from ancient trees of terrace plantations have different

chemical constituents which may explain why these teas lead to different physiological and sensory experiences. The aging process also matters as bioactivity levels change over time as part of the fermentation process.

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