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GREEN TEA AND CLASIC MUSIC EFFECT FOR SYSTOLIC AND DIASTOLIC BLOOD PRESSURE

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ABSTRACT

Green tea (*Camellia* L.) is one of the most popular beverages in the world. Music is an important part of people's way of life. Blood pressure (BP) is a major risk factor for stroke. The electronic blood pressure gauge and stethoscope blood pressure gauge were used to blood pressure at the upper extremity using an expansion cuff. Regardless of green tea, they were satisfied (62%) with classical music and were very satisfied (32%). After drinking green tea with classic music, the systolic blood pressure of men and women was 138.5 mmHg and 139.7 mmHg, respectively. For men, the diastolic blood pressure decreased from 86.9 mmHg to 84.7 mmHg if they listened to music and drank tea. For men, the difference by the measurers averaged 3.33 mmHg at the systolic (maximum blood pressure) and the standard deviation (SD) was 1.99. The average difference in women's relaxation period was 4.53 mmHg and the SD was 3.42. There was no significant difference for systolic blood pressures between male and female in the presence of music. This study showed that green tea and music combined have a synergy effect in preventing high blood pressure.

KEYWORDS: Blood pressure (BP), classic music, green tea, relaxation period.

INTRODUCTION

The hedonic or happiness set point has gained interest throughout the field of positive psychology where it has been developed and revised further.[1] "What everyone wants from life is continuous and genuine happiness," according to the philosopher Spinoza.[2] Mental health is the biggest single predictor of life-satisfaction.

Research presented by Schooler et al.[3] show that when individuals are given a goal to increase happiness while listening to music, they report lower subsequent happiness compared to individuals who are simply told to listen to the music.

Tea (*Camellia* L. spp.) is one of the most popular beverages in the world and it is the most consumed beverage next to water. The chemical components of tea leaf include poly-phenols (catechins/avonoids), alkaloids (caf feine, theobromine, theophylline), volatile oils, polysaccharides, amino acids, lipids and vitamins. Green tea seems to have a positive impact on health due to the catechins found as flavanols.[4] Does green tea also have beneficial effects on BP? Peng et al.[5] suggested that the positive effect of green tea polyphenols on BP was only showed in studies using a low-dose green tea polyphenol, with the long-term intervention duration or ruling out the confounding effects of caffeine.

Determining when someone is mentally distant from their happiness set point and what events trigger those changes can be extremely helpful in treating conditions such as depression. When a change occurs, clinical psychologists work with patients to recover from the depressive spell and return to their hedonic set point more quickly. Because acts of drinking hot tea or coffee often promote temporary positive emotions, one treatment method is to provide patients with different altruistic activities that can help a person raise his or her hedonic set point.[6] An easy way to understand it, is to compare it to another bodily function that works in the same way, our body temperature. Having a high or low body temperature will put stress on our body over time, so it's preferable to have an optimal set-point temperature of 37 degrees Celsius. A cup of warm tea and music can be a turning point in a gloomy mood. While there is no good or bad music for tea, there are certainly more appropriate musical selections.[7] The "better" selection of music depends on the intentions and circumstances surrounding the ceremony. Most people like green tea in the morning because it has the highest caffeine, which is balanced by the theanine, to feel relaxed and alert. In matching the delicacy of aroma, the gentle flavors, the historical relationship to tea culture, and the quality of evanescence, one can choose music that evokes similar qualities.

Blood pressure (BP) is a major risk factor for stroke. In 2017, the American College of Cardiology and the American Heart Association announced new, lower numbers for the hypertension threshold: 130/80 versus the previous minimum of 140/90.[8] In other words, the new guidelines put you in the high blood pressure category if your numbers are 130/80 and higher. The shift, based on a review of hundreds of studies and clinical trials, was profound, resulting in nearly half the country being put on watch. The number of U.S. adults with high blood pressure instantly jumped from 32% to 46%. Similarly, in the 2018 Korean Society of Hypertension guidelines for the management of hypertension, a target Systolic blood pressure (SBP) of 130 mmHg was recommended for high risk hypertensive patients such as hypertensive patients associated with coronary artery disease, congestive heart failure, chronic kidney disease with proteinuria and diabetes mellitus with cardiovascular disease.[9-10]

Music modernizes because it speaks a timeless language of the heart. So much of tea's healing power is in its ability to remind people of their true history, their true selves. This self-reflective quality also exists in the cathartic power of music. This study implies that tea with classic music, active pursuit of happiness may be beneficial while engaging in participants' mood state with high blood pressure.

MATERIALS AND METHODS

Sample extract

Jeju green tea samples were used in this study because they can be manufactured at the desired concentration with Jeju fermented green tea after fermentation. Daily method of tea making (household preparation) from the stock of teas has been used to prepare aqueous extracts. The Jeju concentrated 10 ml of tea is usually put in 100 ml of hot water. Then, the tea cooled down to 50-60℃ because very hot green tea can affect blood pressure.

In this study, it refers to the application of music listening by classical music using Rhythm for life.[10] for four weeks for one half hour during tea drinking. The classic musics were Vivaldi's Le quattro stagioni (four seasons), Schubert's Ellens Gesang III, D. 839, Op. 52, No. 6 (Ave Maria), Grieg's Morning Mood, and Beethoven's WoO 59, Bia 515 **(**Für Elise).

Blood pressure and pulse measurement

The stethoscope used for accuracy assessment was used as a product that satisfies international standards (AAMI SP 9). An electronic blood pressure measurement system was used to measure non-invasive arterial blood pressure at the upper extremity using an expansion cuff. As the closing pressure was gradually pressurized or released, the sound (corotkov sound) was heard from the stethoscope in the closed artery, and the point where the sound appeared was set at systolic blood pressure, and the point where it disappeared was set at relaxation blood pressure. The measurement of pulse, representing beats per minute of heart, was made using Omron (HEM-6181, Japan).

Mean and standard deviation of difference

Mean Difference = (Electronic B.P.M. Measurements – Average B.P.M. Measurements)/Number of measurers.

Standard deviation of difference = $\sqrt{(\mathrm{Dif}-\mathrm{MDif})2/\mathrm{N}}$

Dif: Difference = (electronic blood pressure gauge - average of stethoscope blood pressure gauge).

The repeated measurement of moods and emotions with high frequency is common in ambulatory psychologicaland psychophysiological assessment.[12]

Table 1. Examples of different rating scales.

Current performance	Survey question	Desired or optimal performance
① ② ③ ④ ⑤	How often do you drink tea per day?	① ② ③ ④ ⑤
1 = Rarely (once a month to never); 2 = Daily (one); 3 = Occasionally (2–3 times per day); 4 = Often (4–5 times per day); 5 = Always (more than 5 times per day)		
① ② ③ ④ ⑤	How often do listen to music per day?	① ② ③ ④ ⑤
1 = Rarely (once a month to never); 2 = Daily (one); 3 = Occasionally (2–3 times per day); 4 = Often (4–5 times per day); 5 = Always (more than 5 times per day)		
② ③ ④ ⑤	Are you satisfaction to drink tea and listen to music?	② ③ ④ ⑤
Satisfaction: 1 = Very Dissatisfied; 2 = Dissatisfied; 3 = Neutral; 4 = Satisfied; 5 = Very Satisfied		

RESULTS

Before the survey, green tea was usually not drunk by people with high blood pressure (Fig. 1). About 84% of people with high blood pressure did not drink green tea a month. The survey showed that people with high blood pressure drank green tea little by little. In particular, the number of people who drank one cup of green tea per day increased from 8% to 15%.

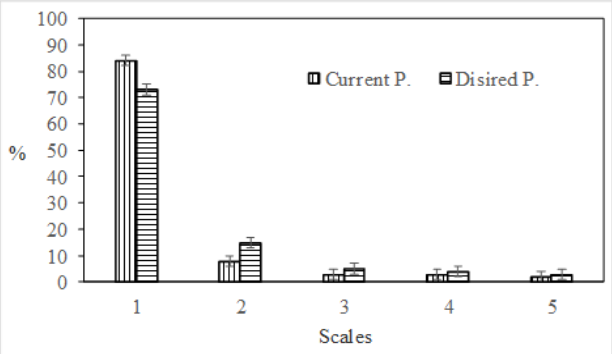

Figure 1. How often do you drink tea per day? 1 = **Rarely (once a month to never); 2 = Daily (one); 3 = Occasionally (2–3 times per day); 4 = Often (4–5 times per day); 5 = Always (more than 5 times per day). P. : Performance.**

People with high blood pressure were listening to music about 86% every day, regardless of drinking green tea. (Fig. 2). People with high blood pressure listen to music more often when they drink green tea and drink green tea in relation to music.

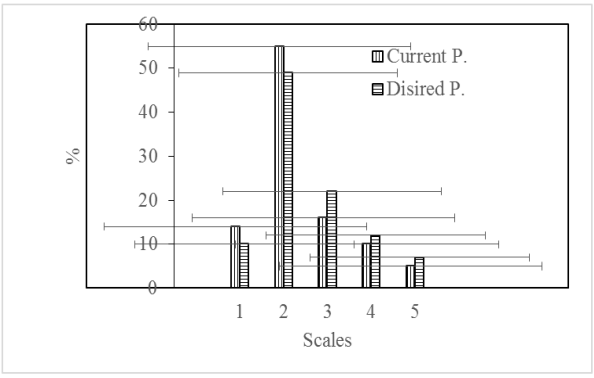

Figure 2. How often do listen to music per day? 1 = **Rarely (once a month to never); 2 = Daily (one); 3 = Occasionally (2–3 times per day); 4 = Often (4–5 times per day); 5 = Always (more than 5 times per day). P. : Performance.**

Satisfaction level

People with high blood pressure showed satisfaction with classical music (Fig. 3). Regardless of green tea, they were satisfied (62%) with classical music and were very satisfied (32%). When music is played while drinking green tea, they are dissatisfied with classical music (0%) and dissatisfied with classical music (0%). The combination of green tea and music showed satisfaction (51%) and satisfaction (45%) with classical music.

Figure 4 was shown that satisfaction with the number of green tea drinks and the existence was higher than that of absence of music.

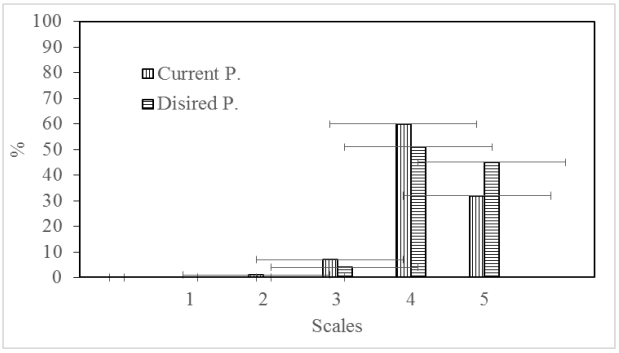

Figure 3. Are you satisfaction to drink tea and listen to music? Satisfaction: 1 = Very Dissatisfied; 2 = Dissatisfied; 3 = Neutral; 4 = Satisfied; 5 = Very Satisfied. P. : Performance.

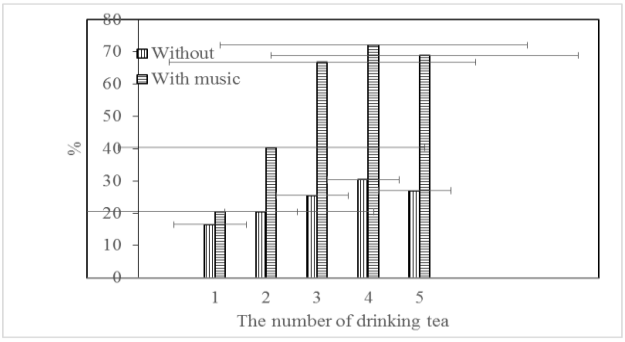

Figure 4. Satisfaction with the number of green tea drinks and the existence or absence of music.

Blood pressure and pulse

After drinking only green tea without music, the systolic blood pressures of men and women were 141.6 mmHg and 142.3 mmHg, respectively (Table 2). After drinking green tea with music, the systolic blood pressure of men and women was 138.5 mmHg and 139.7 mmHg, respectively. There was no significant difference for systolic blood pressures between male and female in the presence of music. It originally took about 60 minutes to get back to blood pressure.

For men, the diastolic blood pressure decreased from 86.9 mmHg to 84.7 mmHg if they listened to music and drank tea. After drinking only green tea without music, the diastolic blood pressure of women was 88.2 mmHg. There was no significant difference for diastolic blood pressure between male and female in the presence of music.

For men, the change in pulse decreased from 51.3 when there was no music to 50.3 when music was combined.

Table 2. The changes in blood pressure and pulse combined with green tea and music.

Category	Gender	No music	With music and meaning	*t*-test	Time taken to return to original blood pressure (min.).
Systolic BP	Men	141.60±4.33	138.53±3.74	0.784	59.3±14.6
	Women	142.33±3.37	139.67±3.58	0.523	61.2±12.3
Diastolic BP	Men	86.93±3.39	84.73±3.81	0.806	60.5±14.1
	Women	88.20±4.77	85.80±4.49	1.120	59.7±13.5
Pulse	Men	51.33±2.13	50.33±1.18	0.516	46.8±8.9
	Women	51.67±3.58	51.07±2.12	0.893	45.7±7.9

Difference between the measuring instrument and the measuring instrument

For men, the difference by the measurers averaged 3.33 mmHg at the systolic (maximum blood pressure) and the standard deviation (SD) was 1.99 (Table 3). The average difference in women's relaxation period was 4.53 mmHg and the SD was 3.42. The mean difference in men's the relaxation period (lowest blood pressure) was 4.27 mmHg and the standard deviation was 3.86. For men, the difference in measurements using electronic and manual blood pressure meters was 3.66 mmHg, with a SD of 2.79.

Table 3. Analysis of the difference between the measuring instrument and the measuring instrument.

Category	Gender	Range (mmHg)	Mean (mmHg)	SD (mmHg)	Frequency of difference (mmHg)		
					0-5	6-10	>10
Auscultatory method (A)-(B)							
Systolic BP	Men	137-153	3.33	1.99	13	2	0
	Women	135-156	4.67	3.02	9	5	1
Diastolic BP	Men	79-100	4.27	3.86	10	4	1
	Women	78-102	4.53	3.42	10	3	2
Auscultatory method/Oscillometric blood pressure measuring system							
Systolic BP	Men	133-155	3.66	2.79	12	2	1
	Women	132-153	4.13	3.04	11	2	2
Diastolic BP	Men	83-97	3.13	2.07	12	3	0
	Women	80-101	3.93	3.24	10	4	1

DISCUSSION

Does the explicit attempt to be happier facilitate or obstruct the actual experience of happiness? Two experiments investigated this question using listening to positive music as a happiness-inducing activity.[13] Study 1 showed that participants assigned to try to boost their mood while listening to 12 minutes of music reported higher positive mood compared to participants who simply listened to music without attempting to alter mood. However, this effect was qualified by the predicted interaction: the music had to be positively valanced (i.e., Copland, not Stravinsky). In Study 2, participants who were instructed to intentionally try to become happier (versus not trying) reported higher increases in subjective happiness after listening to positively valanced music during 5 separate lab visits over a 2-week period. These studies demonstrate that listening to positive music may be an effective way to improve happiness, particularly when it is combined with an intention to become happier.

Clinical findings indicate that music reduces blood pressure in various patients.[14-16] One hypothesis of the mechanism by which calcium regulates blood pressure increases blood pressure through an intracellular, calcium-dependent mechanism in the peripheral vasculature and reduces blood pressure through a central, calcium/CaM-dependent DAsynthesizing system. Exposure to music also significantly increased serum calcium levels and neostriatal DA levels.[17] These results suggest that music leads to increased calcium/CaM-dependent brain dopamine (DA) synthesis in the brain, thus causing a reduction in blood pressure. Music might regulate and/or affect various brain functions through dopaminergic neurotransmission, and might therefore be effective for rectification of symptoms in various diseases that involve DA dysfunction. Green tea significantly reduced SBP and DBP over the duration of the short-term trials.[18-19]

Green tea intake has a significant lowering BP effect only in the trials designed to rule out the confounding effects of caffeine.[4] Human interventions and animal studies have confirmed that both tea and tea metabolites have anti-hypertensive effects although some controversial reports existed.[20] There are a handful of studies that have been done investigating the effect of music on various vital signs, namely systolic blood

pressure (SBP), diastolic blood pressure (DBP), and heart rate (HR).[21] Music has a strong relevance, particularly for young people: adolescents consume music to a great extent and consider music an important part of their lives.[22-24] This study showed that green tea and music combined have a synergy effect in preventing high blood pressure.

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