

# Development of flavored teas using Korea green and black tea

Jeong Choi<sup>1\*</sup>, Young-Ok Kim<sup>1</sup>, Jang-Hyun Park, Bo-Bae Lee<sup>1</sup>, Bong-Yun Oh<sup>1</sup>, Byeong-Ho Kim<sup>1</sup>, Seung-Hee Nam<sup>2</sup>  
<sup>1</sup>Tea Institute, Jellanamdo Agricultural Research and Extension Services, Bosung,  
<sup>2</sup>Institute of Agricultural Science and Technology, Chonnam National University, Gwangju, Republic of Korea

## Introduction

Korean native tea variety was applied to produce high quality green tea and black tea for young people. The green tea was roasted, rolled, and dried tea leaves using tea manufacturing machine. For black tea, harvested tea leaves was withered, rubbed, fermented for 2 hours and followed by drying at room temperature. Flavored tea was produced by citrus oil spraying (3% ~ 7%) on directly green tea or black tea and sealed in plastic bags for 1-2 days (D) at room temperature. Flavored black tea and green tea was kept for 1D, 10D, 30D, 60D, and 90D at 25°C and evaluated their preference of citrus flavor through sensory evaluation.

## Material and methods

- Color- grinded black tea 500mg+ 60% MeOH addition, 10 min sonication and filtered at 25C for 20 min.
- Spectrophotometer(MINOLTA CM-3600d) L, a, b values
- Sensory evaluation with taste, color, aroma, overall values
- Total phenolics Folin-Denis method, Total flavonoids, Lister et al
- Green tea was produced by roasting, rubbing and drying.

Black tea was produced by fermented at room temperature and dried. Citron oil added to 3%, 5%, 7% by spraying at tea and tested their quality for 1d-90d with respect to appearance, tea color, tea taste, and overall preference

## Results and Discussion

[Table 1] Sensory evaluation of flavored black tea according to added Citron flavor oil ratio

Treatment	Appearance	Color of liquor	Flavor	Taste	Overall acceptability	Total
Control (Black tea)	8.2	8.0	7.5	7.9	7.2	77.6
Citron oil 3%	7.8	7.7	7.8	7.9	7.5	77.4
Citron oil 5%	7.8	7.3	8.0	8.2	7.7	78.0
Citron oil 7%	8.4	7.9	8.4	8.3	8.0	82.0

※ Score (10) : Very good 10~9, Good 8~7, Moderate 6~5, Poor 4~3, Very poor 2~1



<Room fermentation>

<Flavoring Citron oil>

<Flavored Black tea>

[Figure 1] The manufacturing process of flavored black tea with Citron flavor oil

[Table 2] Changes in sensory evaluation of flavored black tea according to added Citron flavor ratio during storage

Treatment	1 day	10 days	30 days	60 days	90 days
Citron oil 3%	74.6	77.1	70.8	71.6	70.0
Citron oil 5%	77.4	78.0	71.6	74.8	77.6
Citron oil 7%	82.0	82.3	75.2	74.4	72.0

※ Score (10) : Very good 10~9, Good 8~7, Moderate 6~5, Poor 4~3, Very poor 2~1

[Table 3] Sensory evaluation of flavored green tea according to added Citron flavor oil ratio

Treatment	Appearance	Color of liquor	Flavor	Taste	Overall acceptability	Total
Control (Green tea)	8.4	7.8	7.4	7.1	7.2	75.8
Citron oil 3%	8.1	6.8	7.2	7.0	6.5	71.2
Citron oil 5%	8.2	6.6	7.6	7.2	7.1	73.4
Citron oil 7%	8.2	6.4	7.0	7.0	6.7	70.6

※ Score (10) : Very good 10~9, Good 8~7, Moderate 6~5, Poor 4~3, Very poor 2~1

[Table 4] Changes in sensory evaluation of flavored green tea according to added Citron flavor oil ratio during storage

Treatment	1 day	10 days	30 days	60 days	90 days
Citron oil 3%	71.2	70.6	66.8	74.4	70.4
Citron oil 5%	73.4	72.5	68.0	73.2	73.6
Citron oil 7%	70.6	70.1	70.4	68.0	65.6

※ Score (100) : Very good 100~90, Good 80~70, Moderate 60~50, Poor 40~30, Very poor 20~10

[Table 5] Consumer preference of flavored black tea by packaging method

Products	10 age	20~30 age	40 age	50 age More then	Total
Stick tea	408(30.6%)	307(23.0%)	293(22.0%)	326(24.4%)	1,334(36.2%)
Triangular tea bag	200	338	190	266	994(26.9%)
Tea bag	247	138	157	120	662(17.9%)
30g	25	45	90	112	272(7.6%)
50g	20	55	105	125	305(8.6%)
소 계	900	883	835	949	3,567

※ Target public acceptability : The 12<sup>th</sup> annual Agricultural Exhibition(2014.10.23~11.2) n=3,567

## Conclusions

Aroma of flavored tea was higher at 7% citrus oil spraying than 5% or 3% citrus oil spraying. On the 90th day of black tea, 5% flavored tea exhibited preferred taste and flavor while 3% or 7% citrus oil tea contained less citrus aroma. Among flavored green tea, 5% flavored tea was kept well its citrus aroma for 90 days but 3% flavored tea contained its citrus aroma only for 60 days. Therefore, optimum flavored green tea or black tea could be produced by 5% citrus oil spraying, keeping its citrus aroma for 90 days.

※ This study was financially supported by Rural Development Administration(Project No. PJ010203502)