

Antimicrobial activity of effective antimicrobial compounds in extract from strawberry leaves by TLC

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Introduction

- ❖ Non-edible parts of vegetables are available because they contain higher contents of secondary metabolites than edible parts (Kim et al., 2013).
- ❖ In previous test, extract from thinned unripe fruit of ‘Seolhyang’ strawberry showed antimicrobial activity against fungi and oomycetes (Kim et al., 2012).
- ❖ The objective of this study was to identify antimicrobial compounds from strawberry leaves.

Materials & Methods

❖ Plant material: <i>Fragaria</i> × <i>ananassa</i> L. cv. Seoulhyang	
❖ Tested microorganism	
Strawberry pathogen	Tomato pathogen
<i>Glomerella cingulata</i>	<i>Colletotrichum coccodes</i>
<i>Rhizoctonia solani</i>	<i>Fusarium oxysporum</i> f. sp. <i>lycopersici</i>
<i>Phytophthora cactorum</i>	<i>Phytophthora capsici</i>

Results

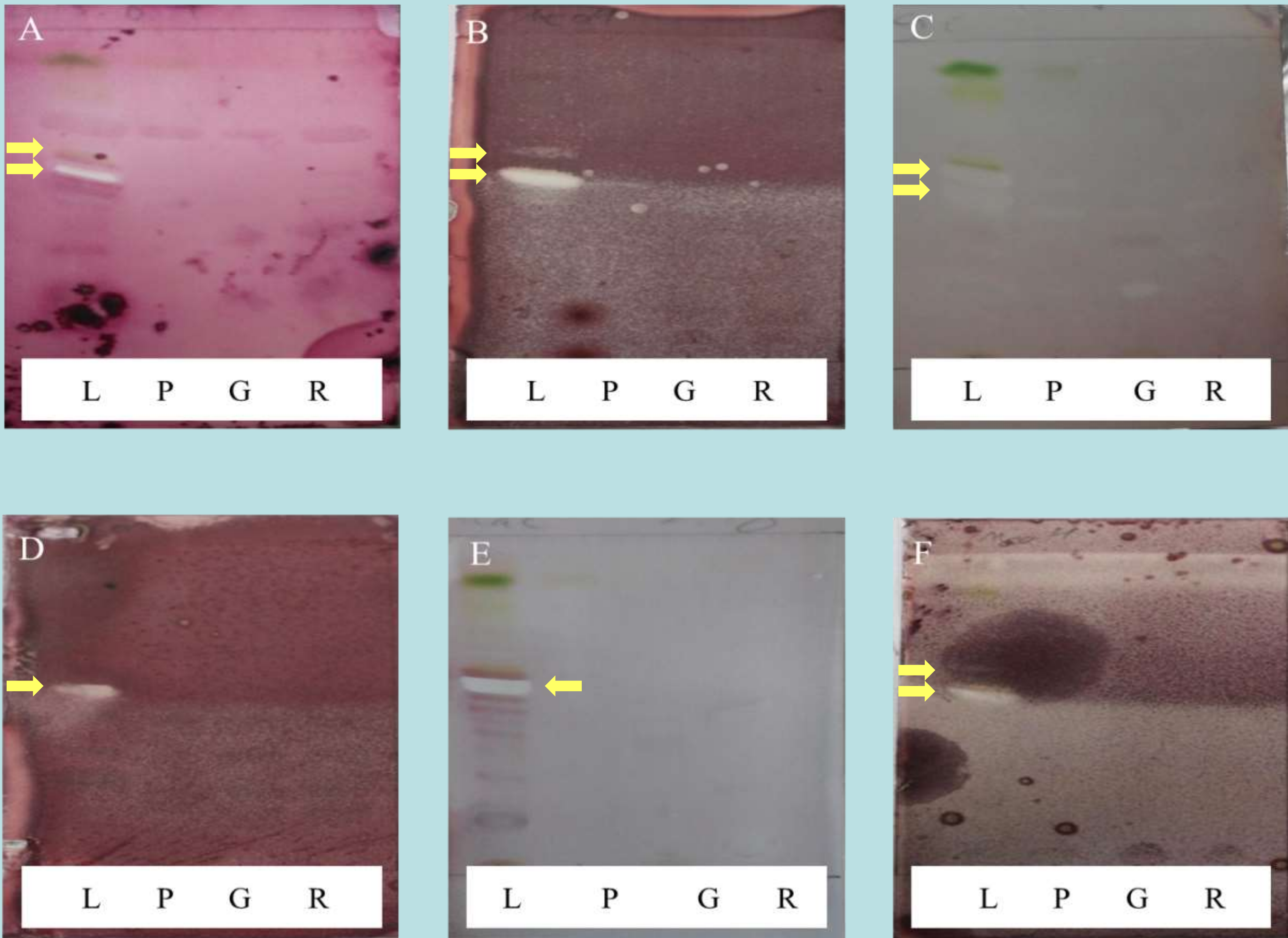


Fig. 1. Bioautogram of methanolic extracts from leaves (L), petioles (P), green fruits (G), and red fruits (R) of strawberry plants. White areas indicate inhibition of microbial growth.

A, *Colletotrichum coccodes*; B, *Fusarium oxysporum*; C, *Glomerella cingulata*; D, *Rhizoctonia solani*; E, *Phytophthora cactorum*; F, *P. capsici*.

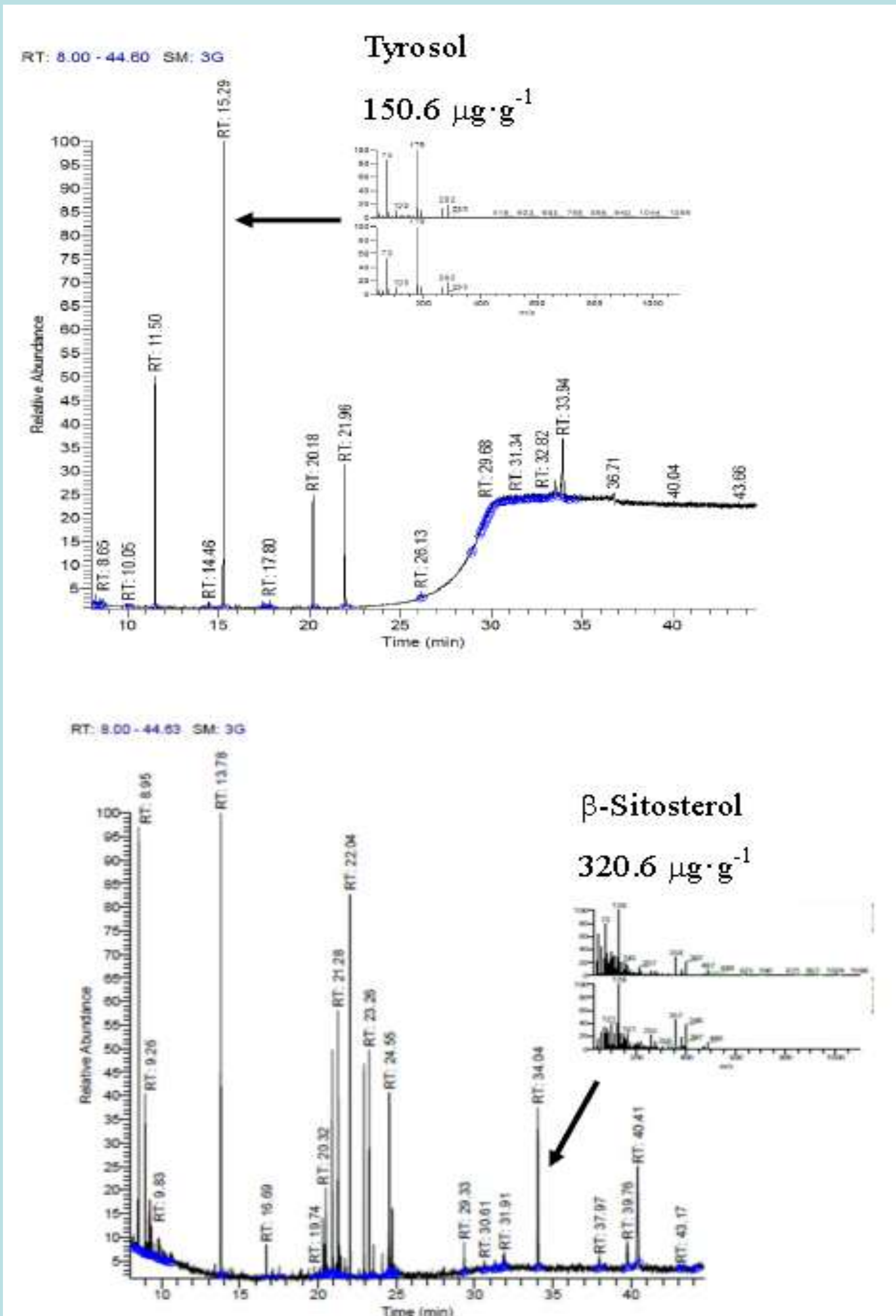


Fig. 2. GC-MS chromatogram of preparative TLC-isolated compounds in methanolic extract from strawberry leaves.

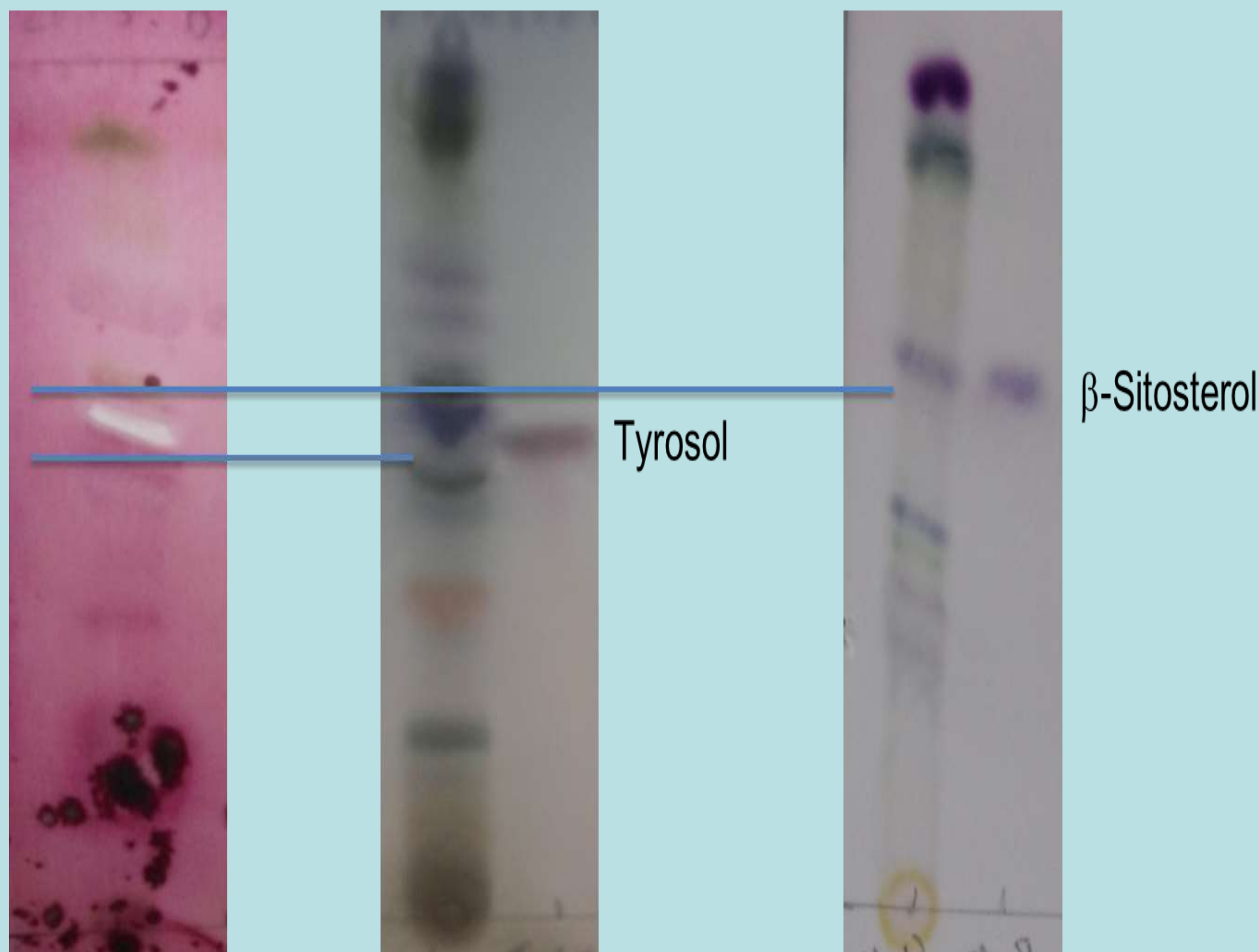


Fig. 3. Tyrosol and β-sitosterol visualized on TLC using anisaldehyde-sulfuric acid.

Table 1. Inhibitory effect of methanolic extract of strawberry leaves against *Colletotrichum acutatum* at the experimental site in **Hwaseong**.

Treatment	Disease incidence (%)	Control value
Methanolic extract of strawberry leaves	9.1 b ^z	70.5 ^y
Propineb	5.9 c	80.8
Non-treatment	30.8 a	

^zMean separation by Duncun's multiple range test. Means followed by the same letter within rows do not differ significantly at 5 % level.

^yControl value = (untreated – treated) / untreated X 100.

Table 2. Inhibitory effect of methanolic extract of strawberry leaves against *Colletotrichum acutatum* at the experimental site of **Cheongju**.

Treatment	Disease incidence (%)	Control value
Methanolic extract of strawberry leaves	5.7 b ^z	67.8 ^y
Propineb	3.1 b	82.5
Non-treatment	17.7 a	

^zMean separation by Duncun's multiple range test. Means followed by the same letter within rows do not differ significantly at 5 % level.

^yControl value = (untreated – treated) / untreated X 100.

References

❖ Kim, D.S., H. Na, Y. Kwack, S.K. Kim, J.W. Heo, and C. Chun. 2013. Composition of secondary metabolites in various parts of ‘Seolhyang’ strawberry plants. *Kor. J. Hort. Sci. Technol.* 31:224-230.

❖ Kim, D.S., H. Na, J.H. Song, Y. Kwack, S.K. Kim, and C. Chun. 2012. Antimicrobial activity of thinned strawberry fruits at different maturation stages. *Kor. J. Hort. Sci. Technol.* 30:769-775.