

Antimicrobial Effect of *Scilla scilloides* (Lindl.) Druce Root Extract

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Objectives

The purpose of this study is to evaluate the root-extract of *S. scilloides* as an antimicrobial agent against food pathogens.

Material and Methods

Sample preparation *S. scilloides* was taken from the southern area of An-dong (Korea). Dust was removed from the roots with water (Fig. 1).

Bacterial strains The bacterial strains used for antimicrobial testing were: *S. aureus* ATCC 35556, *S. enteritidis* ATCC 12021, *E. coli* O157:H7, and *C. parapsilosis*.

Determination of total solids, fat soluble components, and total carbohydrates The solid contents of *S. scilloides* roots were measured after drying at 105°C. The fat-soluble content was extracted using ethyl ether. To determine the total carbohydrate content of both samples, the Lane-Eynon method was used after acid-hydrolysis in 10 mL of 1 N HCl with refluxing in a boiling water bath for 2 hr.

Determination of antimicrobial activity The antimicrobial effect on each sample was determined by measuring the turbidity with a spectrophotometer at 620 nm.

Statistical analysis Analysis of variance was performed for triplicate samples using the SAS program.

Results and Discussion

Solids and fat-soluble contents As shown in Table 1, the solid content of *S. scilloides* root extract was about 63% and the total carbohydrate content was about 57%. The fat-soluble content, which includes the bio-effective compounds, was 3.1% according to the Folch method.

Antimicrobial activity At 0.1% and 1.0% concentrations of extract in TSB-YE broth, the growth of *S. aureus* ATCC 35556 and *C. parapsilosis* KCCM 35428 was inhibited more so than that of *S. enteritidis* ATCC 12021 and *E. coli* O157:H7, a gram-negative bacteria (Fig. 2). Additionally, it appeared that *E. coli* O157:H7 was more resistant to growth inhibition than the other strains.

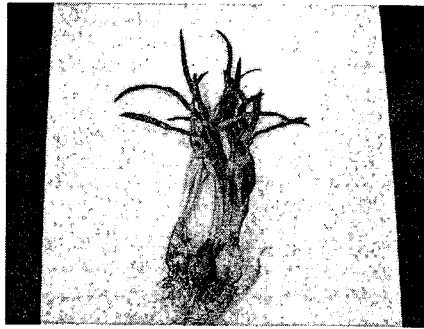


Fig. 1. A picture of *Scilla scilloides* (Lindl.) Druce.

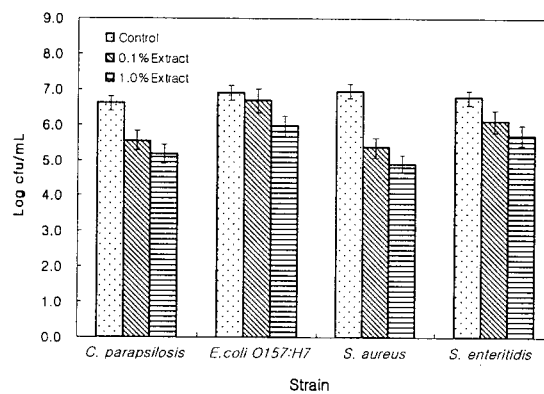


Fig. 2. The antimicrobial effects of *S. scilloides* root extract.

Table 1. The composition of total solids, fat-soluble compounds, and carbohydrates in *S. scilloides* roots

Compounds	Values
Solid content (%)	63.6 ± 1.4 ¹⁾
Fat-soluble content(%)	3.1 ± 0.4
Carbohydrates (%)	56.7 ± 1.5
Others (%)	3.8 ± 0.2
Moisture contents (%)	36.4 ± 1.2

¹⁾The values are mean±S.D