

## Abstract of Presentation

**Note: This paper should be typed in “Times New Roman” of 12pt.**

Research of the Antimicrobial Compounds Produced by Plant Resources

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Plants are producing antimicrobial compounds to protect themselves from the environmental microorganisms. We tried to isolate antimicrobial compounds from some plant materials and tissue cultures.

Activity-guided fractionations of leaf extracts from *Laurus nobilis* L. led to the isolation of a known sesquiterpene lactone, deacetyl laurenobiolide (**1**). Compound **1** showed antimicrobial activity against periopathic pathogens (*Actinomyces viscosus*, *Porphyromonas gingivalis*, *Prevotella intermedia* and *Actinobacillus actinomycetemcomitans*), opportunistic gram-positive bacteria (*Staphylococcus aureus* and *Streptococcus pyogenes*) and fungi (*Candida albicans*, *Cryptococcus neoformans* and *Aspergillus fumigatus*). Furthermore, acetylation and cyclization of deacetyl laurenobiolide (**1**) yielded laurenobiolide (**2**) and a new compound (**3**), respectively. All compounds **1-3** demonstrated growth inhibitory effects with MICs ranging from 31 to 1000  $\mu\text{g mL}^{-1}$ .

Five known triterpene acids, zizyberanolic acid (**4**), betulinic acid (**5**), zizyberanolic acid (**6**), ceanothic acid (**7**) and alphitolic acid (**8**), and a new triterpene acid, 2-*epi*-ceanothic acid (**9**), were isolated from *Zizyphus jujuba* var. *spinosa* cultured cells. Compounds **6**, **7**, **8** and **9** showed antibacterial activity against *Staphylococcus aureus*.

Two new polyacetylenes, 1-hydroxydihydropanaxacol (**12**), and 17-hydroxypanaxacol (**13**), were isolated from the *Panax ginseng* hairy root culture along with dihydropanaxacol (**10**), panaxacol (**11**) and ginsenoyne D (**14**). Highly hydroxylated compounds **10-13** were isolated from the medium and compound **14**, which was a biosynthetic precursor of compound **10**, was isolated from the roots. Compounds **10-13** showed antimicrobial activity against *Staphylococcus aureus*, *Bacillus subtilis*, *Cryptococcus neoformans* and *Aspergillus fumigatus*. It is suggested that *P. ginseng* plants release antimicrobial polyacetylenes into the surrounding soil from the roots as defense compounds.

These systems are categorized into three types, production of essential oils in leaves and branches to store toxic compounds, production of phytoalexins in wounded area and release antimicrobial compounds from the roots.

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