

## SUNDAY - 318 / SUNDAY - 318 - Antibacterial, Antifungal and Anti-Phage Activity of Different Crude Extracts of Armenian Herbs

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📍 Exhibit Hall D, Exhibit and Poster Hall

### Authors

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### Disclosures

**M. Ginovyan:** None. **M. Petrosyan:** None. **A. Trchounian:** None.

### Abstract

Antibiotic resistance is an emerging challenge which humanity faces since late 20<sup>th</sup> century. The tendency to evaluate plant materials for their antimicrobial activity is increasing. The aim of this work was to evaluate crude extracts of five Armenian herbs for their antibacterial, antifungal and anti-phage activity. Plant crude extracts were obtained with maceration technique using five solvents separately: distilled water, methanol, chloroform, acetone, and hexane. Tested Armenian herbs were *Agrimonia eupatoria* L., *Hypericum alpestre* subsp. *polygonifolium* (Rupr.) Avet. & Takht., *Lilium armenum* (Miscz. ex Grossh.) Manden., *Rumex obtusifolius* L., and *Sanguisorba officinalis* L. MIC values of plant extracts were determined by broth microdilution assay against bacteria *Escherichia coli* VKPM-M17, *Pseudomonas aeruginosa* GRP3, *Bacillus subtilis* WT-A1, *Salmonella typhimurium* MDC 1754, and *Staphylococcus aureus* MDC 5233, yeasts *Candida albicans* WT-174, and *Candida guilliermondii* HP-17. Anti-phage activity was evaluated by double overlay plaque assay against T4 phage of *E. coli* C-T4. The MIC values of the tested plant crude extracts generally varied within the range from 64  $\mu\text{g ml}^{-1}$  to 1024  $\mu\text{g ml}^{-1}$ . Acetone and hexane extracts of *H. alpestre* and acetone extract of *S. officinalis* inhibited the growth of *P. aeruginosa* at 64  $\mu\text{g ml}^{-1}$  concentration, which is quite low. Several MIC values of the samples were 125  $\mu\text{g ml}^{-1}$ , which also have some interest. All plants possessed cidal activity against several strains. Moreover, MBC values of *S. officinalis* (acetone and chloroform extracts) against *P. aeruginosa* were 256  $\mu\text{g ml}^{-1}$ , which was significantly low. Collected data showed that almost all plants with the exception of *L. armenum* possessed considerable anti-phage activity against T4 phage of *E. coli* C-T4. Particularly methanol extract of *S. officinalis* reduced viable phage numbers by 2.90  $\text{Log}_{10}$ . Methanol extract of *A. eupatoria* and *H. alpestre*'s acetone extract caused 2.72  $\text{Log}_{10}$  and 1.92  $\text{Log}_{10}$  reduction of phage units respectively. Thus, some of the tested five plant materials had low MIC and MBC values. Most of the plant materials possessed high anti-phage activity as well. Hence, all plant materials with exception of *L. armenum* have prospective for further more comprehensive studies.