**Isolation and identification of lytic bacteriophage against *Streptococcus mutans* isolated from dental caries plaque**

Setareh Pazhouhnia1\*, Shirin Hashemi1, Danial Akbari2, Elahe Esnaashari3

(Setareh Pazhouhnia\*)

[S.pazhouhnia@gmail.com](mailto:S.pazhouhnia@gmail.com)

**‌ Statement of Problem:** Dental caries is a common infectious inflammatory disease worldwide caused by the colonization of many bacteria, especially *Streptococcus mutans.* Increasing resistance of oral pathogens to antibiotics has led to the use of alternative methods to overcome microbial resistance*.* Bacteriophages are an effective tool to deal with microbial agents.  
**Research Purpose:** The aim of this study was isolated and identified lytic bacteriophage against *Streptococcus mutans* isolated from people with dental caries and determined of biological characteristics.

**Research Method:** In this study, dental plaque samples were collected for the isolated of *Streptococcus mutans* and cultivated in Mitis Salivarius agar medium. Suspected *Streptococcus mutans* isolates were confirmed by biochemical tests and PCR. A lytic bacteriophage against *Streptococcus mutans* was isolated from Isfahan city urban wastewater. The effects of temperature, pH values, NaCl concentrations and host range were investigated on the bacteriophage. The bacteriophage stability was evaluated at 37, 22 and 4 °C for 1 month. Data were analyzed by GraphPad Prism version 8.0 software (GraphPad Software Inc., USA) using one-way analysis of variance (ANOVA).

**Results and Conclusion:** The bacteriophage was able to kill 80% of *Streptococcus mutans* isolated and stabled in an almost wide range of temperature (-20–50 °C), pH values (6-10), and NaCl concentrations (1-10%). Also, the bacteriophage was resistance to the mentioned temperatures for 1 month.Based on the physiological properties investigated, the bacteriophage can be used as a suitable choice for genomic studies in preparation for commercialization in the direction of phage therapy.

**Keywords:** Bacteriophage*,* Dental caries, *Streptococcus mutans*