

**The Effectiveness of Ultraviolet Based Methods Versus Other Novel Methods in  
the Disinfection of Escherichia Coli Found in Drinking Water : A Systematic  
Review**

**ABSTRACT**

**Summary :** A total of 19 studies with different disinfection methods, primarily grouped into Ultraviolet (UV) only, combination and Non-UV, are selected to find the effectivity of UV disinfection compared to other novel disinfection methods in the inactivation of *Escherichia coli* (*E. coli*) present in drinking water. All methods chosen produce significant results regarding *E. coli* inactivation.

**Background :** Drinking water is an essential part of life that everyone needs. Many drinking water sources are contaminated with *E. coli*. There are numerous disinfection methods, including UV irradiation. Author wants to find out which disinfection modality, UV irradiation or other methods, is more effective at inactivation *E. coli* found in drinking water.

**Objectives :** To find the effectivity of UV disinfection compared to other novel disinfection methods in the inactivation of *Escherichia coli* present in drinking water.

**Method :** Literatures from PubMed, Science Direct and Google Scholar published in 1990-2020 were searched using MeSH terms and the Boolean Logic 'AND', with the key words included being 'Disinfection', 'Ultraviolet Rays', 'Drinking Water' and '*Escherichia coli*'. Then these literatures were filtered according to inclusion and exclusion criteria. Key data extracted from each finding included details of study design and duration of observation, type of water sample used, movement of water sample, water sample volume, comparison group, method of disinfection, source of disinfection, dose of disinfection, duration of disinfection, enumeration method of counting *E. coli*, type of *E. coli*, initial concentration of *E. coli* and outcome of concentration of *E. coli* after disinfection.

**Results :** 19 studies were included in this systematic review. All studies shows significant decrease in *E.coli* concentration after disinfection.

**Conclusion :** UV treatment could significantly reduce *E. coli* found in drinking water.

**Keywords :** *Drinking water, Escherichia coli, Ultraviolet, UV, Disinfection*