

**Background:**

Disinfectants and Antiseptics are used in health care setups primarily to prevent infections. When these germicides are incorrectly diluted, they might promote the growth of microorganisms which are resistant to antibiotics.

**Aim:**

Aim of this study was to determine the effect of exposure to antiseptics, disinfectants and herbal extract (Neem leaves) on antibiotic susceptibility pattern of *Pseudomonas aeruginosa* and *Acinetobacter baumannii*.

**Materials and methods:**

The selected bacteria were exposed to varying concentrations of traditional disinfectants like Sodium Hypochlorite and Benzalkonium Chloride. MIC of antibiotics like Gentamicin, Ciprofloxacin and Imipenem to the selected bacteria were determined by Agar dilution method before and after exposure to the disinfectants. The effect of prepared Neem leaf extract on the selected bacteria was determined by disc diffusion method.

**Results:**

There was both increase in resistance percentage exhibited by the isolates and also increase in the MICs of antibiotics by many folds after exposure to sub-inhibitory concentrations of the selected disinfectants. Paired sample T test was used to calculate the P value for MICs of antibiotics to the selected clinical isolates before and after exposure to the disinfectants. P value was statistically significant for both the isolates before and after exposure to both the disinfectants ( $P < 0.05$ ). All the isolates of *Pseudomonas aeruginosa* were susceptible to varying concentrations of Neem leaf extract (5%, 10%, 15% and 25%) whereas none of the isolates of *Acinetobacter baumannii* were susceptible to the extract in all the above mentioned concentrations. When the isolates of *Pseudomonas aeruginosa* were checked for susceptibility to the herbal extract after exposure to the disinfectants, they turned resistant to the extract in all the above mentioned concentrations to which they were susceptible before.

**Conclusion:**

Thus it is apparent from this study that usage of disinfectants in below optimum concentrations can result in the emergence of bacteria resistant to antibiotics and biocides which is a global crisis and needs to be addressed.

**Key Words:**

*Pseudomonas aeruginosa*, *Acinetobacter baumannii*, Sodium Hypochlorite, Benzalkonium Chloride, Neem leaf extract, Antibiotic resistance.