

**“Analysis of the aerobic bacterial flora in chronic wounds and the effect of  
locally applied acetic acid in an outpatient setting”**

**Abstract**

**Introduction**

Chronic wounds are mainly a problem in the elderly, increasing the burden on the healthcare system of a country and affecting the quality of life of the individual patient. Knowledge on the microbial profile of chronic wounds is important in effective management.

**Objective**

The study was designed to describe the aerobic bacterial flora in chronic wounds and to identify the pattern of aerobic bacterial flora isolated from the chronic wounds in relation to the associated risk factors. Describing the effect of locally applied acetic acid on chronic wounds was also an objective of the study.

**Methodology**

A descriptive, cross sectional study was carried out in three selected health care institutions in Colombo, Sri Lanka from December 2017 to March 2018. Samples were collected from 196 patients, with chronic wounds more than three months duration. Patients on systemic antibiotic for previous seven days and antiseptic dressings for previous three days were excluded. Out of the 196 patients, those decided by the clinicians to provide acetic acid treatment were included in the acetic acid component of the study. Patients who were given systemic antibiotics during the period of follow up were excluded.

## Results

Majority was male 123 (62.76%). Mean age was 61.63 years. Mean duration of wounds was 17.55 months. Most wounds were preceded with cellulitis (61.2% - 120). Fifty point five percent (99) of wounds were polymicrobial. Total number of patients with diabetes, varicose veins, eczema and chronic lymphedema were 78(39.7%), 52(26.53%) a 33(16.83%), 4 (2%) respectively.

Out of total 302 isolates, majority were *Staphylococcus aureus*(39%- 116). Isolated *Pseudomonas* species were 32%(97).Coagulase negative *Staphylococcus* species, Coliform species and *Streptococcus* species were 12%(37),9%(28)and 3%(8) respectively. Out of the 116 isolates of *Staphylococcus aureus* ,59%(69) were MRSA. *Staphylococcus aureus* (57.7%) and *Pseudomonas* spp (53.8%) are the commonest microorganisms isolated in chronic diabetic wounds.

## Conclusion

There is a statistically significant association between chronic wounds with varicose veins and *Staphylococcus aureus* and MRSA. A positive effect on wound regeneration and reduction of microbiological flora with 1% acetic acid was observed. Further in vivo studies required to determine the percentage of acetic acid and frequency of acetic acid application.