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Promising Antimicrobial Effect of Apple Vinegar as a Natural Decolonizing Agent in Healthcare Workers

By

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Abstract

Introduction: Colonized Healthcare workers (HCWs) are an essential reservoir of nosocomial infections. This study aims to determine the prevalence of Methicillin Resistant *Staphylococcus aureus* (MRSA) carriage rate among HCWs, to evaluate at Fayoum University Hospital the susceptibility of isolates to mupirocin and Chlorhexidine and to investigate the antimicrobial effect of different vinegars on MRSA as a natural decolonizing agent. **Methods:** Nasal and hand swabs were collected from 124 HCWs at Fayoum University Surgical Hospital. Isolates were identified using the standard microbiological methods. Susceptibilities to mupirocin and Chlorhexidine were determined by disk diffusion and broth micro-dilution. Screening antimicrobial effect of commercial vinegars was determined by agar well diffusion method and microdilution method. **Results**: 11.3% (14/124) of HCWs showed nasal carriage of MRSA. Workers were the predominant carriers *(P= 0.013)*. The overall non-nasal carriage rate of MRSA was 6.5% (8/124). Among MRSA isolates Low- level Mupirocin resistance (LLMR) showed in (36.4%, 8/22). MICs ranged from 0.25 to 32 µg/ml. Also (13. 6 %, 3/22) showed Chlorhexidine resistance, MICs ranged from 0.039 to 5 µg/ml. Apple vinegar showed the highest susceptibility among vinegars *(p<0.0001)* with MIC values varied from 0.058 to 1.87 µg/ml. **Discussion:** The emergence of mupirocin (36.4%) and Chlorhexidine (13.6%) resistant *Staphylococcus aureus* among HCWs should be of excessive concern. Apple vinegar has a promising antimicrobial effect against MRSA isolates and could be used as a decolonizing agent.