Type: Poster Presentation

Final Abstract Number: 40.041
Session: Antibiotic Resistance
Date: Thursday, April 3, 2014
Time: 12:45-14:15
Room: Ballroom

Antioxidant, antimicrobial and synergistic activities of tea polyphenols

R.K. Koech [1,*], J. Wanyoko [1], F. Wachira [2]

[1] *Tea Research Foundation of Kenya, Kericho, Kenya*
[2] *Association for Strengthening Agricultural Research in Eastern and Central Africa, Entebbe, Uganda*

Background: Microbial resistance has become an increasing global problem and there is a need to find out novel potent antimicrobial agents with alternative modes of action as accessories to antibiotic therapy.

Methods & Materials: This study investigated the antioxidant, antimicrobial and synergistic properties of tea polyphenols. The tea germplasm from Kenya, China and Japan that are grown in Kenya were characterized for their biochemical profiles. The total phenolic content, theaflavins and thearubigins content of different tea products used in this study were determined spectrophotometrically according to Folin-Ciocalteus and flavognost methods, respectively. The individual catechin contents were characterized by high performance liquid chromatography (HPLC) and identified according to their HPLC retention times, elution order and comparison with authentic standards. The antioxidant activity of tea polyphenols was determined spectrophotometrically on its ability to scavenge 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical. The agar disc diffusion method was used to screen for antimicrobial and synergistic activities of the tea liquors.

Results: Black, green, purple coloured leaf and white (silvery tips) tea products characterized for their biochemical profiles differed significantly in the levels of total polyphenols, total catechins, catechins fractions, theaflavins and thearubigins (p≤0.05). Green, purple coloured leaf (aerated), black tea from terminal buds and white tea products analyzed in this study exhibited slightly higher antioxidant activity as compared to black tea. The different types of tea products assayed in this study exhibited significant influence on the inhibition zone diameters against bacteria and fungi exposed to the tea extracts. Methicillin and penicillinase resistant *S. aureus* ATCC 25923, *C. albicans* ATCC 90028 and a clinical isolate of *C. neoformans* were most susceptible to all tea extracts than *E. coli* and *S. typhi*. There was synergism between most tea extracts and penicillin G against methicillin and penicillinase resistant *S. aureus* ATTC 25923.

Conclusion: This study suggests potential use of tea extracts as an antimicrobial agent.

Type: Poster Presentation

Final Abstract Number: 40.042
Session: Antibiotic Resistance
Date: Thursday, April 3, 2014
Time: 12:45-14:15
Room: Ballroom

Antimicrobial susceptibility of enterococci species isolated from nosocomial infections

H. İlhan [*], C. Artuk, O. Coskun, H.C. Gul, G. Ozbek, C.P. Eyigun

Gulhane Military Medical Academy School of Medicine Hospital, Ankara, Turkey

Background: Enterococci is one of the most common agents of nosocomial infections and increased resistance of enterococci against antimicrobial agents is observed in recent years. This study aims to determine antimicrobial susceptibility of enterococci strains which have isolated as agent of nosocomial infection in hospital of Gulhane Military Medical Academy.

Methods & Materials: The research was planned to be retrospective, and 56 enterococci isolates which were isolated from clinical samples as a agent of nosocomial infection in our hospital between 01 July 2012 - 30 September 2013 were included in the study. Diagnosis of nosocomial infection was done by criteria of Centers For Disease Control and Prevention (CDC). Antimicrobial susceptibility patterns of isolated microorganism were investigated according to criteria of Clinical Laboratory Standars Institute (CLSI). Identification of isolates and determining of antimicrobial susceptibility is done via Phoenix Automatization System.

Results: Eighteen (32%) strains from intensive care unit, 38 (68%) strains from the other clinics were isolated. Of 56 patients, 33 (59%) were male, 23 (41%) were female and average age was 58,6 (15-89) years. The Enterococci strains were Enterococcus spp in 50%(n:28), Enterococcus faecalis in 30%(n:17), Enterococcus faecium in 16%(n:9), Enterococcus avium in 2%(n:1), Enterococcus hirae in 2%(n:1). Enterococci strains were isolated from blood (43%,n:24), urine (35%,n:20), abscess (11%,n:6), wound (9%,n:5) and pleura (2%,n:1) samples, respectively. When antimicrobial susceptibility patterns of isolated Enterococci were investigated, susceptibility rates were determined as 100% to linezolid, 92% to vancomycin, 86% to teicoplanin, 70% to ampicillin and 56% to penicilinG. The high rates of resistance against aminoglycosides (75%) and fluoroquinolones (67%) were detected. 8% of isolated Enterococcus were identification as Vancomycin Resistant Enterococcus (VRE).

Conclusion: In our study, linezolid, vancomycin and teicoplanin are found as the most effective antimicrobials against enterococci isolated from nosocomial infections. Tracking of antimicrobial susceptibility due to increasing resistance rate is very important in treatment of Enterococcal infections.