

Infectious Diseases

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The immunologic effect of hemoperfusion with polymyxin B in trauma-induced swine shock model

Do Wan Kim, Gwan Sic Kim and In Seok Jeong
Chonnam National University, South Korea

Introduction & Aim: Hemoperfusion with adsorption filter is considered to potentially improve the clinical outcomes in septic patients. However, little is known about the effect of anti-inflammation and immune-regulation by this device in traumatic field. The aim of this study is to evaluate the efficacy on early application of adsorption filter in swine trauma model.

Method: Blunt thoracic injury and shock was experimentally made in 10 pigs. Traumatic shock were treated with goal direct therapy based resuscitation (control group, n=5) or plus hemoperfusion with polymyxin-B adsorption filter (HP group, n=5). Hemoperfusion was started at hour 1 after induction of traumatic shock. Blood samples were taken from the animals at baseline, 1 and 7 hours after shock. For anti-inflammatory evaluation, cytokines such as TNF- α , IL-6 were measured by ELISA method and for immunologic analysis, immune cell activities (T lymphocyte subsets, monocyte and natural killer cell) were evaluated with flow cytometry analyses (CD3, CD4, CD8, CD14 and CD56).

Results: Median body weight was 33.1 kg (31.7-38.4 kg). Cytokine study demonstrated that TNF- α and IL-6 were reduced in HP group after 6 hours of hemoperfusion. However, a progressive increase was detected in control group. In activities of T cell lymphocyte subsets (CD3, CD4 and CD8), there was no significant difference between two groups; however, the activities of monocyte (CD 14) and natural killer cell (CD56) were attenuated at 6 hour in HP group, compared to the control group ($p < 0.05$).

Conclusions: We suggest that the hemoperfusion with adsorption filter should have a positive anti-inflammatory effect in early phase of traumatic injury. On the other hand, a negative immune-modulation effect might exist by alleviation of innate immune cell activity. However, further investigation will be needed.

maskjoa@naver.com

Characterization bioactive constituents of essential oil of *Lavandula angustifolia* Mill: Other treatment against human infections

Hadjer Boudjemaa and Rachida Allem
Université Hassiba Benbouali de Chlef, Algeria

Background: Urinary and vaginal infectious diseases reached at high rate, issues of emerging and re-emerging infections due to drug-resistant bacteria becomes a serious danger to human health, medicinal plants constitute a reservoir of bioactive molecules that can kill multidrug resistant microbial infection. In the context of this research, study was intended to characterize molecules bioactive of essential oil and its potentials against urinary and vaginal infections.

Methods: The potential antimicrobial was characterized *in vitro* against 12 reference and clinical multi drug resistant strain encountered in clinical laboratory and the microbiology laboratory of Saidal Medea, Algeria. The minimum inhibitory concentrations (MIC) and the minimum microbicidal concentration (MMC) were determined by disc diffusion assay and agar dilution assay; GC/MS and CPG were utilized to detect the content of bioactive molecule of essential oil.

Results: All strains was appeared sensitive to essential oil of *Lavandula angustifolia* Mill, minimum concentration value was 0.001 v/v can inhibit growth and kill *E. coli* ATCC1536 and *Citrobacter braakii* and *Micrococcus luteus* and *Bacillus subtilis* ATCC6133, *C. albicans* and *C. albicans* ATCC1231. Essential oil presented a good potential biostatic/biocidal. *Lavandula angustifolia* Mill was extremely higher against almost all microbes tested. The composition of bioactive molecule of essential oil was characterized as 45 components made up principally of linalyl anthranilate (31.92%) and linalool (25.63%).

Conclusion: Lavender essential oil possesses strong potential microbicide against the bacterial and fungal human pathogens strains, it can consider as an alternative treatments.

boudja.hadjira@yahoo.fr