

Antimicrobial Activity of *Lepidium draba* Extract on some Pathogenic Microorganisms “in vitro”

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Abstract

Background and objective: In recent years, due to the common use of commercial antimicrobial drugs in the treatment of infectious diseases, the resistance to one or more antibiotics is increasing. The use of *Lepidium draba* as an herbal plant in Iran, has a long history. The aim of this study was to evaluate the antimicrobial activity of *Lepidium draba* extract on some of microorganisms causing infection (in vitro).

Materials and methods: In this experimental study, the extract of *Lepidium draba* aimed by maceration method. Extraction efficiency was calculated based on dry weight. The antimicrobial effect of the *Lepidium draba* extract was studied by evaluated minimum inhibitory concentration, minimum bactericidal/fungicidal concentration, and determination of the zone of microbial growth inhibition (disc diffusion agar and well diffusion agar) on *Escherichia coli*, *Salmonella typhi*, *Listeria innocua*, *Staphylococcus epidermidis* and *Candida albicans*.

Results: The minimum inhibitory concentration and the minimum fungicidal concentration of aqueous extract of *Lepidium draba* were 64 and 128 mg/ml for *Candida albicans* (the most sensitive strain to extract), respectively. The minimum inhibitory concentration of extract for *Escherichia coli*, *Salmonella typhi*, *Listeria innocua*, and *Staphylococcus epidermidis* was 256, 256, 128 and 128 mg/ml, respectively. The minimum bactericidal concentrations of the extract of *Lepidium draba* for these strains were 256, 256, 128, and 256 mg/ml, respectively. For all infectious strains, analysis of data at 5% significance level showed that, by increasing the concentration of the extract, the diameter of zone of microbial growth inhibition (disk diffusion agar and well agar diffusion) had increased. The results showed that the diameter of zone of microbial growth inhibition in the well agar diffusion method was higher than the disk agar diffusion method.

Conclusion: The extract of the *Lepidium draba* had antimicrobial effect on all strains. The most susceptible and resistant to this extract were *Candida albicans* and *Escherichia coli*, respectively. It is recommended that further studies be conducted in vitro and animal model to use this plant for treating infectious diseases and control the growth of pathogenic microorganisms.

Key words: *Lepidium draba*, Extract, Infectious diseases, Antibiotic resistance.

Effects of Iranian *Spirulina platensis* Extract on *Microsporium canis* Isolates

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Abstract

Background and objective: In recent decades, the prevalence of superficial fungal infections, including dermatophytosis, has notably increased. By determining the side effects and effects of using chemical and synthetic drugs, the use of medicinal plants with fewer side effects has been considered by human. The purpose of this study was to investigate antifungal activity of hydroalcoholic extract of *Spirulina platensis* on *Microsporium canis* isolates.

Material and methods: In this experimental study, Persian *Spirulina platensis* extract was prepared as a hydroalcoholic solution. The antifungal effect of different concentrations of algae extract was evaluated with disk-diffusion method on *Microsporium canis* isolates.

Results: All *Microsporium canis* isolates were susceptible to hydroalcoholic extract of *Spirulina platensis*, so that the diameter of the growth inhibition halo was between 0.5 and 19 mm for all isolates. Most inhibitory effect of algae extract was the concentration of 160 mg /disc. Also, the results showed that Terbinafine, as a positive control, had significant difference with all concentrations of algae extract ($P < 0.05$).

Conclusion: according to the results of this study and increasing resistance of pathogenic fungi to conventional antifungal treatments, it is suggested that more research is needed on *Spirulina platensis* to use its antimicrobial compounds in the treatment of infectious diseases such as fungi.

Keywords: Dermatophytosis, *Microsporium canis*, *Spirulina platensis*, Hydroalcoholic extract, Drug resistance

Evaluation of the Appropriate Perioperative Antibiotic Prophylaxis in Cancer Patients Undergoing Abdominal Surgery and Adherence to American Society of Health-System Pharmacists Guideline in an Educational Hospital

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Abstract

Background and objective: Surgical site infection (SSI) is defined as infections occurring within 30 days after a surgical operation or within one year if an implant is left in place after the procedure. Antibiotic prophylaxis formed as part of surgical care to reduce SSI. Antibiotic prescription pattern for SSI prophylaxis and its concordance with American Society of Health-System Pharmacists (ASHP) guideline were evaluated throughout this study.

Materials and method: This study was conducted in Imam Khomeini hospital, cancer institute. Patients with cancer who underwent abdominal surgery were included in this study. The information about type of antibiotic used for prophylaxis, dose, initiation time, and duration were collected during study. Compliance was assessed with the ASHP guideline for every aspect of antibiotic prophylaxis. SSI was assessed during 30 days after surgery.

Results: All the patients needed antibiotic prophylaxis among them, only 103 patients received it. Antibiotic choice, dose and initiation time of prophylaxis were concordant with ASHP guideline in 36.3%, 1.6% and 60.5%, respectively. Unlike the ASHP, the duration of prophylaxis was more than 24 hours in all patients. Finally, 32 patients experienced SSI during 30 days after surgical procedure.

Conclusion: This study showed poor adherence to guideline in various aspects such as type, dose and duration of antibiotics for SSI prophylaxis. It is essential to implement interventions to improve the rational use of antibiotics in this setting.

Keywords: Prophylaxis – Surgical site infections - Antibiotics

Contamination Rate of Aborted Fetal Sheep with *Brucella melitensis*. Gonbad-e Qabus Country. 2018

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Abstract

Background and objective: Brucellosis is the most important zoonotic diseases among the various strains of *Brucella* bacteria, *Brucella melitensis* with sheep's tank, is the most acute and the most common Brucellosis agent in humans that also creating abortions and reduction milk production in sheep, causes problems in animal husbandry. Prevention of the disease with identification and control of the disease reservoir is the most important priority of health organizations in order to eradicate brucellosis. In this study, we assessed identification *Brucella melitensis* in aborted fetal sheep in Gonbad-e Qabus Country.

Materials and methods: The contents of the samples of 57 of aborted fetuses of sheep were sampled then DNA extraction was performed using a gene extraction commercial kit and in order to detect *Brucella melitensis* , the samples were tested by PCR.

Results: Result of PCR was showed of the 57 samples taken in Gonbad-e Qabus County, 10 cases (17.5%) contained *Brucella melitensis*.

Conclusion: Considering the identification of positive cases of brucellosis in sheep in Gonbad-e Qabus County, in order to prevent and eradicate the disease, presenting training classes for livestock breeders, vaccination and removal of positive cases at the level of total livestock in the County is necessary.

Keywords: *Brucella melitensis*, aborted fetal sheep, Gonbad-e Qabus Country

Staphylococcal Cassette Chromosome mec (SCCmec) Typing of Clinical Isolates of *Staphylococcus aureus* by Multiplex PCR

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Abstract

Background and objective: The widespread use of various antibiotics has been responsible for the resistance of *Staphylococcus aureus* to the antibiotics. Methicillin resistance has become especially important because of limiting therapeutic options. Therefore, in this study we evaluated drug resistance and genotyping of staphylococcal cassette chromosome *mec* (SCC*mec*) in *S.aureus* strains isolated from patients admitted in Tehran hospitals.

Materials and methods: The 215 clinical isolates of *S. aureus* was collected from clinical specimens. Antibiotic susceptibility was determined by disk diffusion. PCR was performed to identify the *mecA* gene. Different types of SCC *mec* were identified using the Multiplex PCR method.

Result: The highest resistance was observed for tetracyclin (49.3%), oxacilin (46.04%) and erythromcin (36.5%), followed by ciprofloxacin (29.7%), gentamycin (28.3%), clindamycin (27.4%), co-trimoxazole (23.3%) and vancomycin (0). The frequency of *mecA* gene was 46.44%. Multiplex PCR analysis showed that the distribution of different types of SCC*mec* in this study was the SCC*mec*III (88.9%), SCC*mec*II (03.03%), SCC*mec*I (02.2%), and none typable (6.5%).

Conclusion: It seems that there is a genetic diversity among MRSA circulating in studied hospitals that highlights the need to implement appropriate infection control policies in order to decrease dissemination of multi-drug resistance MRSA types in our hospitals.

Keywords: *Staphylococcus aureus*, MRSA, multiplex PCR, SCC*mec*

Knowledge and Attitude about AIDS in Infected People with HIV in Jahrom. 2018

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Abstract

Background and objective: Measuring the knowledge and attitudes of HIV/AIDS Infected can reflect the success or failure of AIDS treatment centers, including the quality of education and the promotion of health knowledge in this regard. The study aimed to determine the level of Knowledge and Attitude about AIDS in Infected People with HIV in Jahrom.

Materials and methods: This descriptive cross-sectional study was carried out on 55 HIV/AIDS Infected in 2017. The subjects were selected statistically from patients with active records in the counseling center. The data collection method was interview via standard questionnaires.

Results: Overall, 65.5% of the patients were introduced to the Center for the Study of Behavioral Disorders by their physician, 52.7% reported that they were afraid to go to the center for the first time and 65.5% reported that it was difficult for them to get access to this center. In general, 52.7% of patients had a good knowledge, 12.7% had an average knowledge and 34.6% had a poor knowledge. Moreover, 52.7% had a moderate attitude, 45.5% had a poor attitude and 1.8% had a good attitude toward AIDS. There was no significant relationship between knowledge level and attitude of patients ($p>0.05$).

Conclusion: The subjects' knowledge of AIDS was relatively good, but their level of knowledge was quite low on the ways to prevent disease transmission. On the other hand, the studied patients had a negative attitude towards AIDS. This suggests the discrimination against HIV/AIDS Infected and could be due to poor knowledge of AIDS in the community.

Keywords: knowledge, attitude, HIV/AIDS Infected, counseling centers, Jahrom

Knowledge and Attitude of Health Care Provider in Amol County in Preventing the Echinococcosis

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Abstract

Background and objective: Echinococcosis is one of the most important parasitic zoonotic diseases that is important in many parts of the world, like Iran, in medical, veterinary and even economic fields. The aim of this study was to determine the knowledge and attitude of health care provider in Amol county in preventing the echinococcosis.

Materials and methods: In this descriptive cross-sectional study, 194 of Health Care Provider were selected via census method. Data Collection Tools was a researcher-made questionnaire consisting of three sections: demographic information, knowledge and attitude. To analyze the data, descriptive and analytical statistics were used using SPSS 18 software. The significance level was considered to be 0.05.

Results: The mean score of knowledge was 61.8 ± 17.9 and the attitude was 57.4 ± 21.4 , respectively. Among the variables studied, exposure, education, and male gender were more knowledgeable ($P < 0.05$). There was also a significant association between the history of exposure to disease and attitude ($P < 0.05$). The association between knowledge and attitude showed that there is a significant positive correlation between knowledge and attitude ($P < 0.05$).

Conclusion: Knowledge and attitude of Amol's health care provider in preventing the echinococcosis are moderate and education improves two components. Also, revising the form and content of education, adopting a comprehensive approach, providing appropriate and effective teaching materials and placing it at the disposal of health care providers seems necessary.

Keywords: Echinococcosis, Knowledge, Attitude, health care provider, Amol