genetic determinants against tetracycline antibiotic. In the present study total of 200 cow milk samples were screened for the detection of antibiotic resistance determinants in *S. aureus*. Data analysis showed that most of the recovered *S. aureus* strains were sensitive to the tetracycline and all four genetic determinants (*tetK, tetL, tetP, and otrB*) are present in local isolates of tetracycline resistant *S. aureus*. These are commonly used antibiotics and these findings have prompting concern with rational use of these therapeutics.

Key words: Milk, Cow, Antibiotics, Isolates

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Cyto-Genotoxic Evaluation of Sub-Chronic Exposure of BPA on Bovine Lymphocytes

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Abstract

Bisphenol-A (BPA) is a predominately used chemical to manufacture polycarbonate plastic goods and as an epoxy resin to form protective linings. BPA can act as an environmental endocrine disruptor and can pass through the body of animals from different sources. The environmental factors include leakage from plastic tanks, water tubs, animal feed containers, pipes, soil and photodegradation. The normal body function of bovine animals can get influenced by the toxic effect of BPA. Studies show it can be lethal even in minimal amounts and can get highly toxic over time, resulting in mimicking and disturbing bodies' normal hormonal functions. This study was designed to determine the invitro sub-chronic cytotoxic and genotoxic effects of bisphenol-A on bovine lymphocytes. Blood samples were collected from the animal shed of department of theriogenology, university of veterinary and animal sciences (UVAS), Lahore. Lymphocytes were extracted by using Histopaque technique by following standard protocol. In-vitro nutritional requirements for the growth of cells were maintained by utilizing RPMI-1640 media. Cultured lymphocytes were exposed to six concentrations of BPA (10µg/ml, 20µg/ml, 30µg/ml, 50µg/ml, 70µg/ml, 100µg/ml) to evaluate the cytotoxic and genotoxic effect on bovine lymphocytes. Treated cells were incubated for 24h, 48h, and 72h. Cells were kept at 37°C temperature with 5% CO_2. Here cells were exposed in a concentration and time-dependent way to achieve the results in a sub-chronic manner. Cytotoxic effects related with BPA were assessed by applying MTT assay to treated cells of each hour. Genotoxic effects were evaluated by performing comet assay and micronucleus assay. The results obtained from MTT assay revealed that BPA can increase the production of oxidative species which decreases the viability of cells. The number of cells were slightly decreased after 24h, but an increased level of reduced cell viability was found after 72h. The production of DNA lesions and micronuclei were least noted after 24h. The highest level of DNA damage and micronuclei formation was observed after 72h of exposure. Negligible results were found in 48h of exposure in all three assays. Significant results were found in cells exposed for 72h. Our study concluded that BPA could induce cytotoxic and genotoxic effects in a concentration and time-dependent manner. Even low concentrations of BPA if exposed continuously can end up damaging the DNA integrity.

Keywords: DNA damage, oxidative stress, endocrine disruptors

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Prevalence, Antimicrobial Profiling and Molecular Characterization of Antimicrobial Resistant Genes of Pathogenic Bacteria Detected in *Sperata sarwari* (*S. seenghala*) of the Indus Riverine System in Pakistan

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Abstract

Sperata sarwari (*S. seenghala*) is a freshwater fish of riverine systems known for its economic and ecological importance that has recently been introduced into the farming system. The current study aimed to identify antibiotic resistance (ABR) genes in two selected bacteria and their prevalence in *S. seenghala* sampled from riverine system in Pakistan. Samples were collected from different organs of 480 fish samples of *S. seenghala*. Pure culture of selected bacteria was grown on TSA media plates. DNA was isolated using a GeneJET Kit and ABR genes were identified in the selected bacteria through PCR amplification. Phylogenetic relationship among selected bacteria was compared by phylogenetic tree of 16S rRNA gene. Antimicrobial susceptibility was tested against 14 antibiotic discs. A total of 135 (28%) including 29 (6.0%) *E. tarda* and 33 (6.9%) *E. coli* isolates, were retrieved. Phylogenetic tree analysis revealed 100% similarity between *E. coli* and *E. tarda*. Maximum 5.62% occurrence of sul3 gene was recorded in *E. tarda*,