**Antimicrobial Uses in Lactating Cows and its Residual Change in Milk Immediate after Antimicrobial Course**



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**Department of Dairy and Poultry Science**

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**Chattogram Veterinary and Animal Sciences University**

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**This is to certify that we have examined the above Master’s thesis and have found that is complete and satisfactory in all respects, and that all revisions required by the thesis examination committee have been made**

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**Authorization**

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Kaberi Talukder

June 2020

*Dedicated to*

MY BELOVED FAMILY

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**LIST OF ABBREVIATIONS**

|  |  |
| --- | --- |
| **Abbreviations** | **Elaborations** |
| % | Percentage |
| °C | Degree Celsius |
| °F | Degree Fahrenheit |
| < | Less than |
| > | Greater than |
| ADI | Acceptable Daily intake |
| AI | Artificial Insemination |
| AM | Antimicrobials |
| AMR | Antimicrobial Resistance |
| BARA | Bangladesh Antimicrobials Resistance Association |
| BBS | Bangladesh Bureau of Statistics |
| BQ | Black Quarter |
| CMA | Chattogram Metropolitan Area |
| CVASU | Chattogram Veterinary and Animal Sciences University |
| DLS | Department of Livestock Services |
| et al. | And his associates |
| etc. | Etecetera |
| EU | European Union  |
| FMD | Foot and Mouth Disease |
| GC | Gas Chromatography |
| GI | Gastrointestinal Infection |
| H2SO4 | Sulphuric Acid |
| HPLC | High Performance Liquid Chromatography |
| hrs | Hours |
| HS | Hemorrhagic Septicemia  |
| kg | Killogram |
| L | Local-bred |
| LC | Liquid Chromatography |
| LH | Luteinizing Hormone |
| mg | Milligram |
| ml | Millilitre |
| MRL | Maximum Residual Limit |
| RF | Retardation Factor |
| SD | Standard Deviation |
| sq. km | Square Kilometer |
| TLC | Thin Layer Chromatography |
| ULO | Upazilla Livestock Officer |
| UV | Ultraviolet |
| VS | Veterinary Surgeon |
| WHO | World Health Organization |

**ABSTRACT**

Infectious disease is a major problem with a negative economic impact for livestock farmers throughout the world particularly in Bangladesh and the common practice is using antimicrobial (AM) to treat them. Nevertheless, its indiscriminate usage might lead to development of AM resistance (AMR), reduction of beneficial gut microflora, and may have residual effects in milk and milk products. On this context, present study was intended to visualize an overview on the pattern of AM uses in the commercial dairy farms of Chattogram district and determining AM residue in milk samples, collected from AM treated dairy cows. To achieve the aim 50 commercial dairy farms (29 from Sikolbaha, 11 from Chattogram Metropolitan Area, 7 from Boalkhali, 3 from Patiya) were selected from December 2018 to June 2019. Data of survey showed that 92% farmers used vaccines against common diseases and 98% performed deworming for their farm animals. Only 12% of the farms maintained proper isolation practices for diseased animals. Only 26% of the farmers got proper veterinary technical services. Simple laboratory tests were done in 26% of the farms for disease diagnosis. Only 4% of the farmers maintained proper withdrawal period and 12% of the selected farmers were aware of AM residue and resistance. Twenty dairy cows having AM (Ciprofloxacin and Oxytetracycline) treatment were selected from 20 different dairy farms to check the AM residues and screening of milk constituents. Five samples per cow were collected at 1st, 2nd, 3rd, 5th and 7th day after completing the last dose of AM course to perform Thin Layer Chromatography (TLC) and chemical analysis (fat and protein percentage). Results of TLC showed that ciprofloxacin and oxytetracycline from milk were absent from 7th and 5th day after administration, respectively. Percentage of fat and protein of the samples collected at different days showed significant differences (p<0.05). In a nutshell to reduce the risks, regulatory authorities should ensure proper withdrawal period before supplying milk at market and definite supervisions are necessary on application of these drugs. Motivation and training of the farmers are needed to avoid unnecessary use of AMs and to maintain proper withdrawal period of these drugs.

***Key words:*** Antimicrobial, Antimicrobial residue in milk, Withdrawal period, TLC, Lactating cows.