Application of Antibiotics in the Livestock Industries

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ABSTRACT

The purpose of this study is to investigate the characteristics of antibiotics including structure and physical-chemical properties, mechanism of drug action, drug resistance, pharmacokinetics, toxicity and side effects, the residues and testing of antibiotics, the marketing of antibiotics, and the current status and application in the livestock industry. The livestock industry plays an important role in the agroeconomics of Taiwan. In 2001, the total amount of the livestock industry was up to 101.2 billion NT dollars, and approximately 28.7 percent of the total value of the agriculture production in Taiwan. The output value of pigs and broiler chickens was 46.25 and 27.06 billion NT dollars, placing them in the first and second position of the livestock industry. Antibiotics are the most important anti-infectives. The worldwide market share of antibiotics is 59% of the anti-infectives in the year 2000. There are more than one thousand kinds of antibiotics which have been discovered gradually by scientists; however, there are only about one hundred and fifty antibiotics in clinical use. according to the Centers for Disease Control（CDC）of USA. Due to the different chemical structures, antibiotics can be divided into the following types: β-Lactam antibiotics, Tetracyclines antibiotics, Macrolides antibiotics, Aminoglycosides antibiotics, Quinolones antibiotics, and Miscellaneous antibiotics. Depending upon the different functions and the diverse characteristics of those antibiotics, they can be divided into the following type：those that inhibit the formation of the bacteria cell wall（e.g. β-Lactam antibiotics）, and those that inhibit the synthesis of protein（e.g. Tetracyclines antibiotics, Macrolides antibiotics, Aminoglycosides antibiotics, chloramphenicol）and of the nucleic acid （like Quinolones antibiotics）. Besides, antibiotics can also be divided into broad-spectrum and narrow-spectrum types depending on the antibacterial spectrum. In addition to the treatment and prevention of diseases, at present, antibiotics are incorporated into the animal ’ s feed in low dose to improve animal growth and enhance efficiency of feed in the livestock industries. Due to antibiotics being used extensively in animals, it is crucial that they are used correctly and at reasonable quantity levels. This will aid in preventing residues left in the meat, which is consumed by humans, as well as an emergence of bacterial resistance by the animal. Keywords: antibiotics, livestock industry, drug resistance, residues, anti-infectives.

Keywords : 抗生素 ; 畜牧產業 ; 抗藥性 ; 殘留 ; 抗感染用藥

Table of Contents

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