

*Popular Article*

**DOPING IN ANIMALS: A CONCISE OUTLOOK**

**Thippeswamy J.<sup>1</sup>, Pathak, A.<sup>1</sup>, Patil, C.<sup>1</sup>, Saikia, R.<sup>1</sup>, Choudhury, S.<sup>2</sup> and \*Shukla, A.<sup>3</sup>**

<sup>1</sup>M.V.Sc. Scholar, Department of Veterinary Pharmacology and Toxicology,  
DUVASU, Mathura

<sup>2</sup>Assistant Professor, Department of Veterinary Pharmacology and Toxicology,  
DUVASU, Mathura

<sup>3</sup>Assistant Professor, Department of Veterinary Pharmacology  
and Toxicology, DUVASU, Mathura

E-mail: princu.dr@gmail.com (\**Corresponding Author*)

**Abstract:** Animals are reared for differential purposes by different communities in the world. The exploitation of normal physiological limitations put forth the challenges to the world towards injudicious use of chemicals and drugs. Doping is routinely used term in the human field of medicine whereas, in animals, equine population is mostly encountered this act of employing drugs to deceive public about helath and performance of the animals. Hence the higher institutions and governing authorities have taken the initiatives to control this act through stringent regulations. This article encompasses the basic development in the doping and its detection along with the regulations etc.

**Keywords:** Animal, Doping, WADA, Performance etc.

## INTRODUCTION

Animals are exploited for better health, performance and endurance. In order to attain these characters doping is being employed intentionally. Animal doping is defined as an act of employing drugs in animals to deceive public about the health and performance of an animal in any competitive animal show, exhibition, trade or other activity. The chemicals or drugs used for doping purpose are called dope while the treated animal is termed as doped. The term 'dope' has probably been originated from a Dutch word 'dop', an alcoholic beverage made of grape skins used by Zulu warriors to enhance their endurance in battle fields or as a stimulant drink used to energies themselves in ceremonial dances. These dopes produce clinical manifestations in the form of sedation, hallucinations, confusion, mental excitability etc. Doping is commonly used in human athletic events and is aimed at improving the appearance or functioning of an athlete in sports event. This serious problem has been raised by several countries and nearly 139 countries are signatories to UNESCO convention against doping in Sport. The Government of India is actively contemplating to reframe legislation

and regulations on anti-doping laws that shall be in compliance with guidelines from World Anti-Doping Agency (WADA).

### **DRUGS IMPLICATED IN DOPING**

A variety of chemicals and drugs have been employed in doping and injudicious and unethical use of these might lead to several medical concerns including drug resistance. The major substances are listed below:

❖ **CNS STIMULANTS:** It Improves performance and locomotor activity. Examples: Amphetamine, Methyl amphetamine, Methyl phenidate, Pemoline, Caffeine. It also act on central nervous system (CNS) in equines with role as performance enhancer. Examples: Ephedrine, Etaminophylline, Nitroglycerine.

❖ **OPIOIDS: Agonists:** These produce amphetamine like effects in horses and raise nociceptive threshold. e.g. Morphine, Apomorphine, Fentanyl

❖ **CNS DEPRESSANTS:** These agents are intentionally used in 'doping to lose' or to confer soundness to nervous or aggressive animals. e.g. Acepromazine, Azaperone, Diazepam, Xylazine, Detomidine, Medetomidine.

❖ **ADRENOCEPTOR AGONISTS:** Agents like epinephrine improves cardiac function & energy mobilization; whereas Clenbuterol and Terbutaline improves respiratory function, bronchodilation, increase lean meat content, decrease fat deposition, improve skeletal muscle vascularity and motor functioning.

❖ **ANTI-INFLAMMATORY AGENTS:** Agents such as corticosteroids e.g. Prednisolone etc. improves tissue perfusion and cellular metabolism in cases of shock, reduce loss of cellular enzymes during exercise, covers poulder and prevent allergy mediated bronchospams. On the other hand, NSAIDs e.g. Salicylate, Flunixin, Naproxen etc. suppress pain and inflammation of musculoskeletal origin or even visceral pain.

❖ **DIURETICS:** It includes several drugs such as Furosemide, thiazides etc. Furosemide relieves pulmonary edema, increases urine output, decreases urinary concentration of suspect dope etc.

❖ **MISCELLANEOUS DRUGS:** e.g. Systemic alkalizers, Methylxanthines, Anabolic Steroids, Local anesthetics etc.

The List of classes of prohibited substances and methods of doping according to the World Anti-doping Agency is updated at least once a year, usually more often. The effective version of 2007 is presented below. Substances prohibited in all situations are anabolic agents (mainly steroids), hormones, beta 2-agonists, agents with anti-estrogenic activity, diuretics

and masking agents. Methods to increase oxygen transfer, manipulations of the sample and the practice of gene doping are also prohibited. In addition, Stimulants, Narcotics, Cannabis derivatives and Glucocorticosteroids are also prohibited in a competitive situation. All these banned substances must not be present in tested urine samples, therefore, laboratories report the presence of such compounds in the samples on a qualitative Basis.

### **CLASSIFICATION OF VARIOUS FORMS OF ANIMAL DOPING**

1. **Intentional doping:** This may further be divided into three forms:

- **Excitant or stimulant doping:** This form has been also called as doping to win wherein the dope has been used to improve the performance (courage, stamina or endurance) of the animal.
- **Depressant doping or malicious doping:** Wherein a dope is used to impair the performance of a competing animal in a show or race. Where drugs are used to depress the animal.
- **Therapeutic doping or controlled medication:** Wherein a dope has been used to confer soundness to an otherwise unfit, unsound or disabled animal. The act enables to mask the weakness in the animal.

2. **Accidental doping:** This refers to a state of doping that most often results from ingestion of prohibited agents via food/feed that are normal constituents of some feedstuff or of contaminating herbaceous plants known to contain prohibited agents.

3. **Intentional- accidental doping:** This peculiar type of doping must be always suspected whenever accidental doping involving feeding of plant material is concerned. There is always a tendency to use such plants for feeding that are known to contain some active components that affect the performance of the animal and the intent is to evade legal implications. Intentional aspect of accidental doping must always be suspected in such events.

### **ANALYSIS OF DOPING AGENTS**

Doping agents can be analyzed by initial screening techniques which are based on simple color reactions of the analyte with the test reagents. As a rule, Anabolic steroids and Corticosteroids are screened by Gas liquid chromatography (GLC) and (Mass Spectrometer (MS) or by RIA. RIA can provide useful first line screening procedure for the assessment of Etorphine induced doping in race horses. Gas chromatography coupled to mass spectrometry constitutes the most significant tool for identification of unknown. ELISA tests provide sensitive and effective screening for drug abusers.

## CONCLUSION

It can be concluded from the above calligraphy that one should use drugs judiciously and ethically. The improper and intentional dosing will further lead to other ailment and might be a cause of resistance in the modern world. The regulations and laws should be imposed strictly.

### **Suggestive Readings:**

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