

Phytogenic Growth Promoter as Replacers for Antibiotic Growth Promoter in Poultry Birds

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Abstract

The phytogenic growth promoters supplemented in the diet or added in the drinking water in the broiler birds have a promising biological effect on their growth performance, to reduce the pathogenic bacteriological load in different parts of digestive tract and to increase villus height in different segments of small intestine mainly in duodenum.

Keywords: Growth promoter; Phytogenic

Introduction

Phytogenic feed additives (often also called phytobiotics or botanicals) are commonly defined as plant-derived compounds incorporated into diets to improve the productivity of livestock through amelioration of feed properties, promotion of the individual production performance, and improving the quality of food derived from those animals, such as herbs (flowering, non woody, and non persistent plants), spices (herbs with an intensive smell or taste commonly added to human food), essential oils (volatile lipophilic compounds derived by cold expression or by steam or alcohol distillation), or oleoresins (extracts derived by non aqueous solvents). Within phytogenic feed additives, the content of active substances in products may vary widely, depending on the plant part used (e.g. seeds, leaf, root or bark), harvesting season, and geographical origin. The technique for processing (e.g. cold expression, steam distillation, extraction with non aqueous solvents etc.) modifies the active substances and associated compounds within the final product.

Effect on Physiological Parameters

The phytogenic growth promoter remains active throughout the gastrointestinal tract and as a consequence, it will exert broad spectrum antimicrobial action, will enhance nutrient utilization by exhibiting improvement in overall growth performance of broilers and by augmenting the gastrointestinal histomorphology thereby enhancing the host immunity [1].

Research on Related Aspects

Jamroz and Kamel [2] who observed improvements in daily weight gain (8.1%) and in feed conversion ratio (7.7%) of chickens when feed with diets supplemented (300 mg/kg) with a plant extract containing capsaicin, cinnamaldehyde and carvacrol. Biavatti et al. [3] reported *Alternanthera brasiliana* extracts (180 ml/200 kg feed) improved broiler performance from 14 to 21 days. Hernandez et al. [4] studied that blend of essential oils of cinnamon, pepper and oregano compounds improved digestibility of nutrients in chicken. Jang et al. [5] in chicken is the benefit of some natural substances on gastro intestinal enzymatic activity, most likely improving nutrient digestibility.

Burt [6] stated microbial analysis of minimum inhibitory concentration (MIC) of plant extracts from spices and herbs, as well as of pure active substances revealed levels that considerably exceeded the dietary doses when used as phytogenic feed additive. Aksit et al. [7] reported antimicrobial action of phytogenic feed additive may be in improving the microbial hygiene of carcass.

Batal and Parsons [8] indicated that micronutrients also influenced the morphology of intestines. They observed an increased height of villi of jejunum in broilers at 28th day of age when fed with 5 g BioMos/kg from 7 to 28 day. Jamroz et al. [9] have conducted a study that phytogenic formulations contained pungent principles (e.g. capsaicin) significantly increased intestinal mucus production.

An experiment was conducted for evaluating the efficiency or effect of the phytogenic growth promoter. The phytogenic growth promoter was active throughout the gastrointestinal tract and as a consequence, it will exert broad spectrum antimicrobial action, will enhance nutrient utilization by improving gastrointestinal histo-morphology and will augment the host immunity. In the experiment, two proven and approved phytogenic growth promoters, Digestarom 1317 (dosage 150 ppm) and Digestarom 1440 (dosage 800 ppm) AC were fed to the broiler chickens against an antibiotic growth promoter, Bacitracin Methylene Disalicylate (BMD) [10].

Digestarom AC is a combination of phytogenic components with glycerides of short chain fatty acids. Basically, Digestarom AC is a complex of plant extracts and plant essential oils along with monoglycerides, lactic acids and multiglyceride complexes. Being a complex of plant extracts and essential oils, Digestarom AC is hypothesized to stimulate feed intake, intestinal secretion of enzymes and enhance digestibility of nutrients. Additionally, Digestarom AC is anticipated to act as a broad spectrum antimicrobial substances throughout the gastrointestinal tract and promote development of the villus structure of the gut [10].

Summary

The phytogenic growth promoter enhance productive performance of the broiler in terms of body weight gain with minimum alteration of gut morphology and the possibility of bacterial invasion is much

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Received May 15, 2013; Accepted May 20, 2013; Published May 22, 2013

Citation: Ganguly S (2013) Phytogenic Growth Promoter as Replacers for Antibiotic Growth Promoter in Poultry Birds. Adv Pharmacoeconom Drug Safety 2: e119. doi:10.4172/2167-1052.1000e119

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less. Phytogetic growth promoter can be used as a potent replacer of antibiotic growth promoter if used at optimum level.

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