

EFFICACY OF 'ACTOVET-CRD' A NOVEL HERBAL FORMULATION AS PROPHYLACTIC AND THERAPEUTIC AGENT FOR CRD COMPLEX IN POULTRY

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INTRODUCTION

Presently the poultry industry suffers from heavy losses due to mortality, reduced egg production, subclinical infections which not only cause stunted production, but also would find no market. Moreover, unannounced outbreaks of economically important diseases render complete destocking of the poultry farm including parent stock and its products like egg, meat etc. When the health department notices such incidences of disease outbreaks, they suggest closure/relocate the poultry farms. Chronic Respiratory Disease (CRD) is of high economic importance as this causes heavy production loss and mortality of the birds. This is caused by various microorganisms which in major include *Mycoplasma gallisepticum*, *Streptococcus*, *E.coli*, etc and other sub clinical infections. Various antibiotics are continuously used as antibiotics as feed additives poses the threat of their accumulation in the viscera of the birds and passing on to the end user- the consumers. Also, the drug resistance may be shown to these antibiotics need constant search for upgraded genre/generation of antibiotics. Hence, the need of the hour is to find a suitable herbal drug which constantly prevents birds from the threat of new infection, alleviation of subclinical infections and immunobooster in a most natural way. Veterinary pharmaceuticals are commonly used in poultry farming to prevent and treat microbial infections as well as to increase feed efficiency, but their use has created public and environmental health concerns. Poultry litter contains antimicrobial residues and resistant bacteria (like *Escherichia coli*); when applied as fertilizer, the level and effects of these pharmaceuticals and antimicrobial-resistant bacteria in the environment are of concern. *E. coli* in major would be

resistant to many antibiotics. Resistance to β -lactam antibiotics (amoxicillin, ceftiofur), tetracyclines, and sulfonamides was the most prevalent. Studies have concluded that broiler litter is a source of antimicrobial residues and represents a reservoir of multiple antibiotic-resistant *E. coli*. (Furtula *et al.*, 2010).

Keywords: Chronic Respiratory disease, Actovet-CRD, Poultry, herbal formulation, resistant strains

MATERIAL AND METHODS:

An experiment was conducted in five different commercial layer poultry farms to study the efficacy of the formulation '**Actovet-CRD**' (a formulation of **Celest Pharma labs Pvt. Ltd**, Devarahosahally, Nelamangala taluk, Bangalore, India) as a Prophylactic and therapeutic agent against the respiratory diseases which includes symptomatic relief from CRD complex, general health of the birds, and as immune booster to counteract other secondary infections. A total of five farmers possessing commercial layer poultry farm in and around the Mudigere taluk of Chikmagalur district, Karnataka state were chosen for the experiment. Randomly 100 ailing birds showing symptoms of CRD complex of age groups of 10 days, 3 weeks and 10 weeks representing the age groups of 0-2 weeks (T_1), 2-4 weeks (T_2) and >4 weeks (T_3) of age respectively were isolated for the experiment from a large size group of birds from each farmer. The same number of birds were kept as control. As they were brought from the same source they belonged to same age group, breed and comparable body weights (BW). The BW (g) of the birds at the beginning of the experiment was 180 ± 3.8 and 180 ± 2.9 g for T_1 ; 410 ± 5.6 and 440 ± 6.1 g for T_2 and for 1940 ± 9.3 and 2010 ± 12.2 for T_3 for the control and the experiment respectively. The birds in each group were treated with the herbal formulation "Actovet-CRD" at the dosage levels of 10 ml/100 birds for T_1 ; 20 ml/100 birds for T_2 and 40 ml/100 birds per day for T_3 through drinking water. The blood samples were drawn at 0, 7 and 14 day of the experiment to study hematological parameters like glucose and total proteins (TP). Periodically, clinical signs, behavior and body weight and PM (post mortem) examination of the dead and sacrificed birds were carried out during the

experiment. Also another group of healthy birds were given the drug with dosage equivalent to half the therapeutic levels to study whether this acts as a prophylactic agent for different age group of birds. The data was recorded and was analyzed according to the standard protocols of Snedecor and Cochran (1994).

RESULTS AND DISCUSSION:

The area included in the present study received high annual rainfall and humidity which most likely to precipitate in respiratory disorder among birds including CRD following treatment with herbal drug. Also symptoms (Jagadish Prasad, 2005) included off feed, gasping for breath, isolation from the flock, sneezing, rattling, reduced growth rate, water gargling/flowing sound in the early morning hours near the flock as the birds face difficulty in respiration during this humid period, gaseous or beaded exudates in air sacs and tracheal mucosa, thickened pneumonic areas in the lungs on PM examination and others symptoms of CRD. The therapy to this disease can be comparable with the use of antibiotics in poultry feed (Olga and Henry, 1959a). The results of the experiment have shown that there was no significant change in the growth of the birds as indicated by their body weight. Body weights (g) recorded at the end of 15 days from the beginning of the experiment for the control and experimental groups were 450 ± 12.2 and 470 ± 14 g for T₁; 910 ± 14.3 and 940 ± 15 g for T₂ and 2450 ± 23 and 2580 ± 40 g for T₃ respectively.

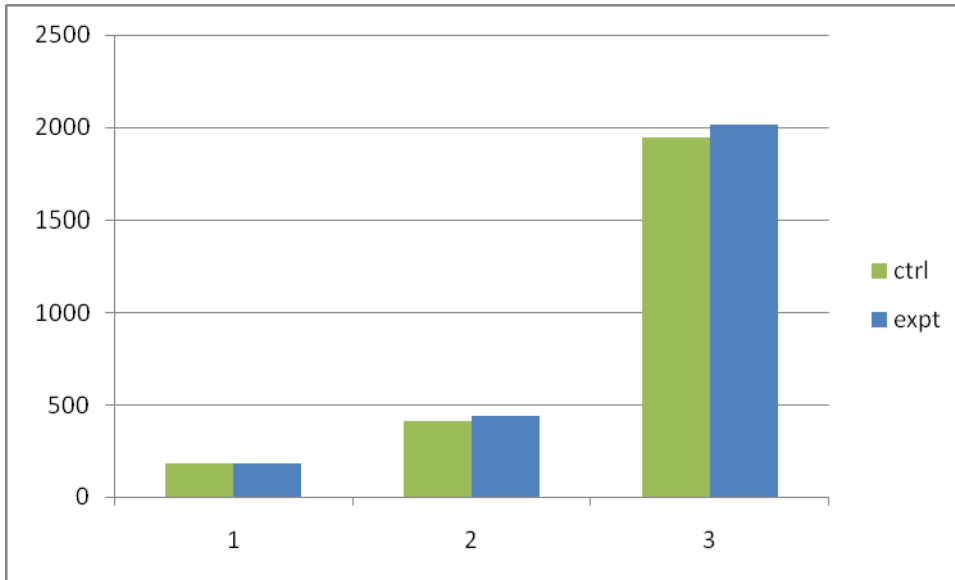
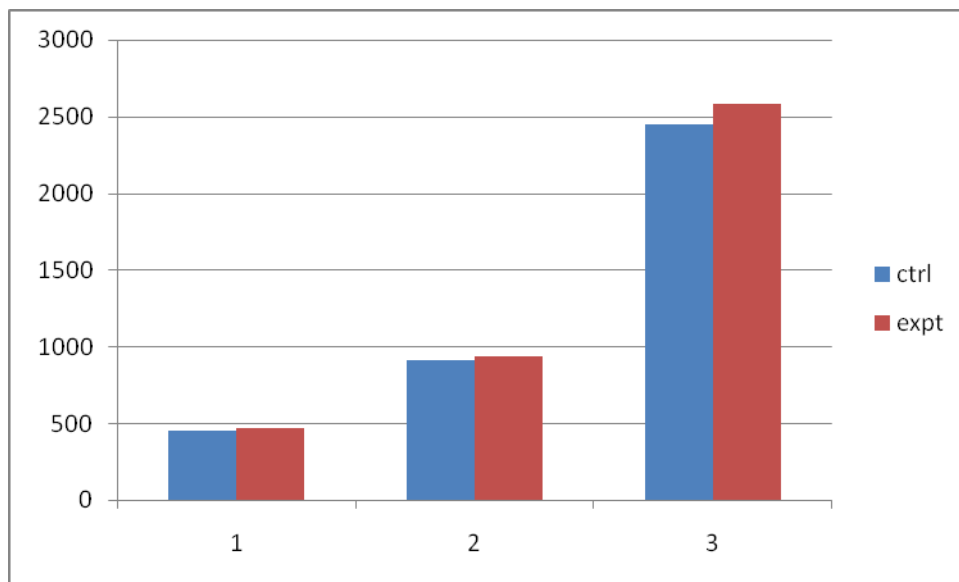
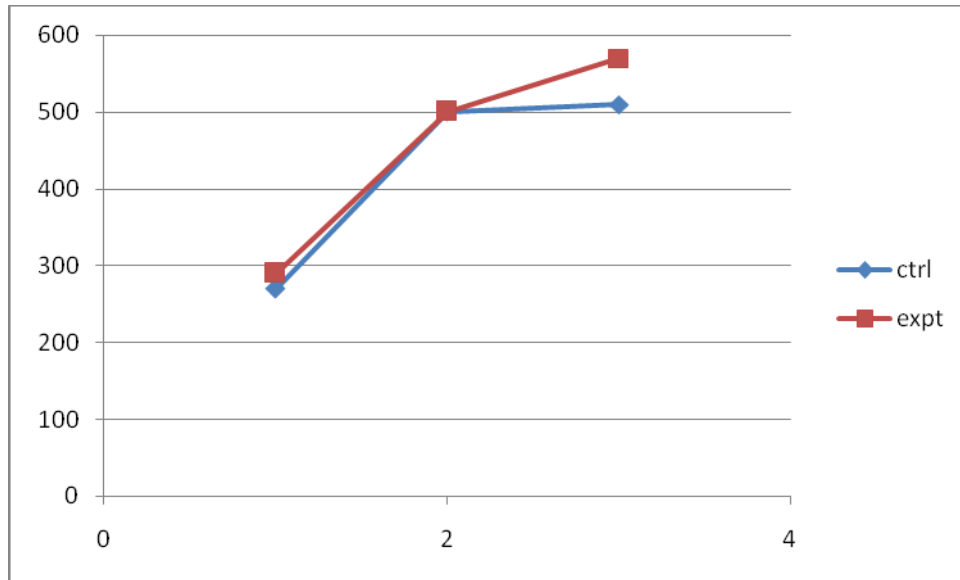


Fig: Body weight of the birds (g) before the experiment



Body weight of the birds (g) after the experiment



X-axis: age of birds (weeks); Y-difference in weight of birds (g)

Fig: Graphical representation of weight of birds before and after experiment

Though the body weight increased numerically, but they were not statistically significant ($P \leq 0.05$). But the symptoms of the CRD in the infected birds subsided within a week period of treatment. The birds stopped gasping, rales and other symptoms of the CRD within 6-7 days of treatment at all therapeutic dosage levels. The time required for different experimental group to return from morbid stage to healthiness depended upon the flock. The mortality in the infected birds was reduced by 90% compared to the control. The PM examination of sacrificed birds revealed clear/less mucus in the respiratory tract. Further, the healthy birds in the original flock were given the drug at prophylactic dosage level equal to half of the therapeutic dosage level. They remained healthy and no infection of the CRD was traced out. The birds were observed for a period of 15 days for various parameters like growth rate, cessation of CRD complex symptoms, mortality %, spread of infections.

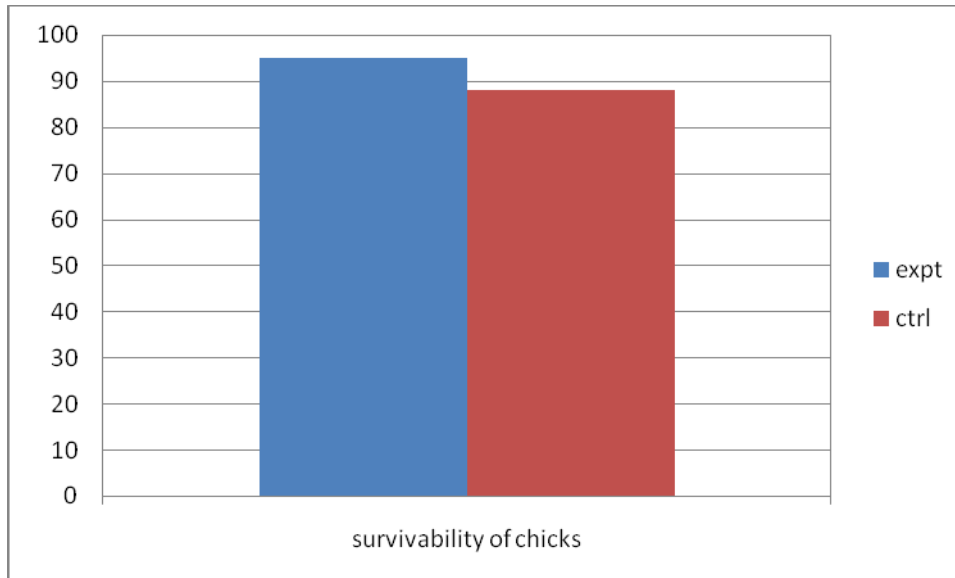
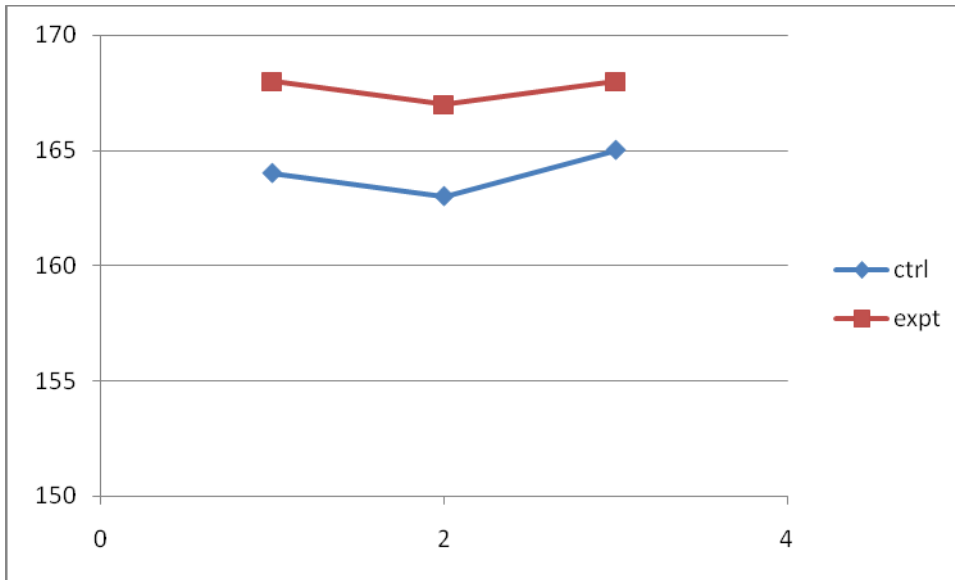


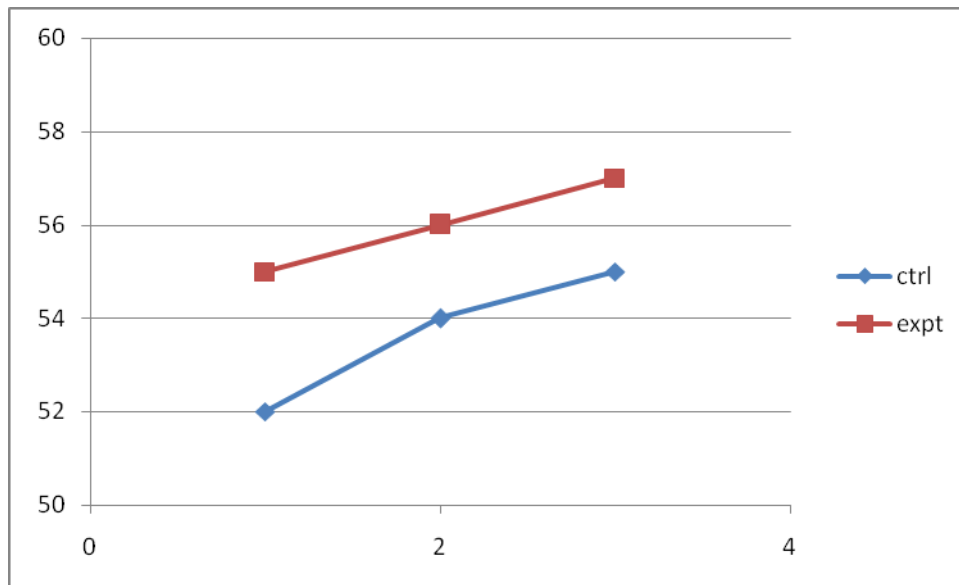
Fig: Graphical representation of survivability of chicks (0-2 wks)

The survivability % of the chicks (0-2 wks age) treated with Actovet-CRD was higher (95 ± 2 %) over the control (88 ± 2 %) as the untreated birds suffered from secondary infection along with CRD complex resulting in chick mortality. Hematological parameters were studied to observe the general health of the birds. The glucose levels (mg/dl) were 164 ± 5.6 , 168 ± 4.9 for the control and experimental groups of T_1 ; 163 ± 5.9 and 167 ± 7.2 for the control and experimental groups of T_2 and 165 ± 5.9 and 168 ± 6.7 for T_3 respectively. They were not statistically significant. The TP (g/liter) were 52 ± 2.2 and 55 ± 3.1 for the control and experimental groups of T_1 ; 54 ± 4.1 and 56 ± 3.6 for the control and experimental groups of T_2 and 55 ± 4.6 and 57 ± 5.2 for T_3 respectively. They were not statistically significant and were within the normal range (Jerry Kaneko, 1999). The total proteins along with glucose indicate that the drug merely affects the nutriture.



X-axis: age of birds (weeks); Y-Serum glucose levels (mg/dl)

Fig: Graphical representation of serum glucose levels t of birds before and after experiment



X-axis: age of birds (weeks); Y- Total proteins (g/liter) levels

Fig: Graphical representation of Total proteins (g/liter) levels of birds

It is also suggested from these results that to better to deworm and treat the birds for infectious diseases with antibiotics and immune boosters like Actovet-CRD before vaccination to get a good immune response.

INFERENCES:

The results of the present experiment indicate that the new herbal drug “Actovet-CRD” could be effectively used against the CRD complex as well as other respiratory distress syndromes in the poultry. They enhanced rate of survivability of young chicks and mortality of the infected birds was reduced by 90%. The respiratory syndrome could be effectively treated within a week period of treatment as indicated by cessation of symptoms of CRD and PM examination of respiratory tract.

The scientific reviews also acknowledge the fact that antibiotic use by humans is the driving force behind the antibiotic resistance problems encountered in human medicine, as they have also acknowledged the fact that house pets/birds treated with antibiotics may pose an even greater risk of transfer of antibiotic-resistant bacteria to people due to the intimate association between people and their pets (Chris Harris). The EU Commission banned the use of all antibiotic feed additives classed as growth promoters in the EU against the advice of its own Scientific Committee on Animal Nutrition (SCAN, 1996; SCAN, 1998). Such measures encourage the products that cure the disease using herbal/naturally derived therapeutic agents like Actovet-CRD. Use of antibiotics in sub therapeutic doses as growth-promoting feed additives for animal production is widespread in the U.S. and throughout the world. Previous studies have concluded that size fractionation of poultry (broiler) litter followed by storage facilitated reutilization of litter as a soil amendment or bedding supplement. In a study, representative bacterial isolates were tested for their sensitivity to 12 common antibiotics (ampicillin, bacitracin, cephalothin, erythromycin, gentamicin, kanamycin, nalidixic acid, neomycin, penicillin, streptomycin, sulfisoxazole, and tetracycline) using the Kirby-Bauer technique. Pathogens and indicator bacteria tested were found to be resistant to multiple antibiotics. Data suggest that microbial

contamination of litter should be reduced or eliminated prior to reutilization to minimize environmental health risks related to transfer of antibiotic-resistant bacteria to humans or other animals (Kelley, 1998).

Moreover, the farmers perception regarding the efficacy of the drug was encouraging.

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