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***Research paper***

# Investigation of Various Diseases Occurred in Poultry and Management Strategies for Eradication

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**Abstract**

Poultry plays a significant role in the Indian economy. Around 60 billion chickens are raised per annum as a basis of food for both their eggs and meat. Poultry meat is in significant source of minerals, protein and various vitamins to balance the diet of human. Broiler farming is an important source of family income depending on size of the farm. Chicken farming in Commercial way is the most fruitful business in India and all around the world. Proper farm management practice and care of birds will result in decent profit in a short span of time. In this paper, we are discussing various diseases caused to poultry hen and their preventing or treating methods. Our results shows that some of disease cannot be cured and only it can be prevented. Spreading of disease with the help of contaminated equipment and infected poultry trade is measured as foremost means of spreading of poultry disease. In some countries migratory birds have also been foremost means of spreading of poultry disease like highly pathogenic viruses.

***Keywords***: *Avian Influenza; Laryngotracheitis virus; Salmonella Enteritis.*

## 1. Introduction

The two blow fly species Aldrichina graham and Calliphora nigribarbis, the H5 influenza A virus genes were detected from crop, intestinal organs and gut and hemagglutinin (HA) genes [1]. One of the viral diseases called Newcastle Disease is a fatal disease which is reported to affect various avian hosts, irrespective of sex and age and it is the most serious poultry disease in the world. Newcastle Disease is an extremely transmissible disease of the nervous and respiratory systems, typically affecting chickens, but occasionally affecting other species, such as turkeys, guinea fowls, ducks etc. We can also forecast the period in which Newcastle Disease commonly occurs, even though Newcastle Disease causes cannot be identified. Newcastle Disease is the utmost significant poultry disease perpetrating very heavy loss each year [2]. . Spreading of disease with the help of contaminated equipment and infected poultry trade is measured as foremost means of spreading H5N1 AI highly pathogenic viruses [3]. Salmonella are intracellular enteric pathogens which important facultative that remain to be an important basis of foodborne diseases like gastroenteritis in human beings. Salmonella is accompany through live broilers to slaughter plant, contaminating processed carcasses. Salmonella is also spread by means of growing broilers [4]. The genus Salmonella characteristic feature which comprises most species including cold-blooded animals, birds, mammals and humans. It is one devastating bacterial diseases in poultry industry in terms of mortality, welfare and performance. Multi-factorial disease which affects poultry is Necrotic Enteritis in which to precipitate the outbreak of disease, a number of co-factors are required. Clostridium perfringens is the main cause of Necrotic Enteritis [5]. Necrotic Enteritis disturb the balance of the intestinal ecosystem and suppress the immune system, in such way the risk of Necrotic Enteritis outbreak increases. By managing litter properly, reducing concurrent enteric infections, and using proper feed additives, we can control the Necrotic Enteritis poultry disease.H9N2 influenza are at this time widespread in quail, chickens, and other poultry animals all around the world and few cases in humans. In chickens a serious respiratory pathogen is Infectious laryngotracheitis virus all around the world [6]. Avian pathogenic Escherichia Coli possess virulence factors and cause avian colibacillosis and a serious problem due to high economic losses for the poultry industry [7].

## 2. Avian Influenza

The two blow fly species were detected from crop, intestinal organs and gut and hemagglutinin genes in the affected areas of the virus epidemic [8]. Current studies concentrated on transmission by Mechanical movement of flies should be completed to control H5N1 avian influenza [9]. Village and smallholder poultry in poverty alleviation are the main affecting people indicating that training methodologies are not reached effectively to fight against the harmful diseases [14]. The from migratory shorebirds the isolation of AI viruses in Australia shows the potential risk of introducing novel strains in various countries but this remains unproven [15]. These kind of Migratory shorebirds carrying highly pathogenic and exchanging viruses. Guinea fowls, chickens, ducks, turkeys, pigeons, etc. are concerned the Poultry species are concern in the study. Under the system of traditional backyard management the chickens which are Non-vaccinated were raised in Southern regions and in the Rift Valley of wet and dry districts respectively [10]. In west Southern districts all the dry areas of the Rift Valley the Higher Newcastle disease (NCD) zero-prevalence rates of virus antibodies were verified [11]. From wild birds, the poultry chickens are prone to acquire infection. Virus passes from one to the other by uninterrupted cycle of infection due to free ranging management system.Continuous foci of infection will also cause by huge numbers of chickens are gathered in the local open mar-

kets [12]. After the fatal case, the uptake rate increased, at first, people accept antiviral medication were slow [13].

## 3. Salmonella Enteritis

Salmonella Enteritis begin at hatchery and ending at egg production facilities. [16]. Incorporation of control measures in variety methodologies from farm to table which includes specific management intervention strategies on farm helped to control Salmonella Enteritis. An early pro-inflammatory response is induced by Non-typhoid Salmonella enterica in chickens, but reaction is short-lived, results in colonization in gastrointestinal tract, and persistent infections transmit to native hosts via fecal [17]. Upon Salmonella infection, the metabolic pathways and regulation of immune were altered. Combining functional studies and Trek cell isolation, kinome analysis of immune and cytokine transcriptional analysis and metabolic signaling pathways in the cecum of chickens during an early and late infection [18]. Continuing effort to control ingress of human pathogen into poultry meat products and growing birds. Biosecurity of broiler flocks Assessment is perhaps more important [19]. Contamination of Salmonella poultry droppings used as fresh beef retailers, manure, aprons. Retail fresh beef and fresh beef retail tables, were carried out [21]. There is a close relationship between environmental hygiene and personal and the spread of microorganisms causing disease which is not known by many food vendors [22]. The seroprevalence of Salmonella and Mycoplasma gallisepticum (MG) infection in six model breeder poultry farms [23]. Host-related factors and Bacterial genetics may subsidize to more shifts in populations of Salmonella in poultry commercial farming and strategies of intervention could control their colonization growth [24]. Populations of Salmonella has a number of significant shifts in associated with poultry farming sources over the last years. Gallinarum and Salmonella Pullorum of The predominant serovars were successfully eradicated in the first half of the last century from poultry commercial farming with the help of NPIP programs like [25]. To control current Salmonella problems there are developing strategies which is created by most researchers and additional serovars emergence are increased threat to health of public. Selected wild-type bacteriophages Evaluation of the potential from poultry samples of carcass rinse will reduce the recovery of Salmonella [26]. Contaminated poultry meat create major Public health implications, raw chicken importance in international trade, end product criterion and the potential for an inappropriate to adversely affect such trade. To establish sovereign levels of protection, international WTO agreements are entitled all countries are signed [27]. to sanitary measures, the most legally defensible and appropriate approach is criteria by limits of detection and confidence limits of sampling and testing are effective in controlling the contamination of poultry products and raw meat with bacteria causing human disease[28]. Technical assistance to performance standard in sample sets and to meet the performance standards are few targeted outreach and, the food chain and continue to cook, properly handle, and store all poultry products and meat to guard against illness [29].

## 4. H9N2 influenza A viruses

Human virus-like mutations and Human virus-like receptor species of poultry serve as host in zoonotic influenza viruses' transmission of from aquatic birds to humans [30]. The apparent propensity of avian viruses with genetic complement to infect humans is the important potential for the novel pathogen for human emergence [31]. The common things between internal genes of H5N1 and the H9N2 viruses is in their ability to infect humans [32]. The quail isolate replicates more efficient in ducks and then do the chicken isolates, suggesting barriers of low species also exist in domestic poultry [33]. H9N2 influenza viruses have maintain long-term endemicity and established in terrestrial poultry in most different countries. Sometimes H9N2 influenza viruses transmit to mammals, including humans [34]. This issues increased concerns about risk to human health. The potential Avian H9N2 viruses have to reassert with human viruses, leads to enhanced pathogenicity [35]. To develop vaccine for avian influenza of the H9N2subtype as a priority for pandemic preparedness [36]. Necessitated a study of distribution and characterization viruses in poultry to control Transmission of H9N2 influenza viruses to humans [37]. Studies showed that both H9N2 lineages were primarily spread by the aerosol route and that neither quail nor chickens showed evidence of disease. The studies provide biological properties of Avian H9N2 viruses in hosts and emphasize surveillance of viruses in poultry and mammals [38].

## 5. Highly Pathogenic Avian Influenza

An important aspect of epidemiology is economics and social impact of highly pathogenic avian influenza and its control [39]. These impacts have importance in terms of understanding the secondary spread of disease and also the choice of the most effective control methods. [40]. While compensation and restocking are important, the greatest need of smallholder poultry producers faced with the challenge of highly pathogenic avian influenza is for information, knowledge and training for highly pathogenic avian influenza -safe family poultry production [41]. The effect of highly pathogenic avian influenza, if unchecked, is to destroy these contributions of family poultry to the rural family; and to multiply the danger of a highly pathogenic avian influenza pandemic. Greatest need is for information, knowledge and training towards highly pathogenic avian influenza -safe family poultry production. Certain agricultural management practices together with an improved infrastructural and socio-economic status of households have the potential to decrease the risk of highly pathogenic avian influenza outbreaks – information that will be essential for policy makers for defining improved highly pathogenic avian influenza control strategies in the region and globally [42]. After the large number of migratory birds' outbreak that killed, the researchers are found that implication of wild birds was given greater credence as agents of spread. Birds sampled for virological investigations and Improvements in knowledge of the wild birds involved in outbreaks could be achieved through field ornithologists who are competent [43]. Highly pathogenic avian influenza (H5N1) virus's hooded vultures from poultry shows viruses belong to 1 of 3 sub lineages initially found in most of the African countries. To avoid primary infections of carrion feeders there should be infected carcasses which should be carefully disposed and these kind of activities should be enforced on affected farms [44]. The role of scavenger birds and hooded vultures and other birds as vectors of highly pathogenic avian influenza to other poultry birds, wild birds, mammals and humans and their potential role as sentinels. The disposal of poultry carcasses is a reality vides a suitable alternative to burial, burning, every producer must face. As the average flock and rendering and is cost-effective, convenient, size increases, the logistics of disposing of car and environmentally sound [45]. Composting is a natural process that involves losses can create additional problems as it be- the breakdown and stabilization of organic mat- comes more difficult and expensive to bury into a rich humus-like material (compost) burn, or render large numbers of carcasses [46]. Composting of poultry carcasses is gaining popularity as an alternative to burning, burying, or rendering for disposal of poultry carcasses. One of the major advantages of composting over other methods of disposal is that the end product is recyclable: composted material can be applied to the field as a soil amendment and fertilizer or can be used as the source of manure for composting additional material [47].

## 6. Laryngotracheitis Virus

One of the severe pathogen which causes respiratory problems in poultry chickens is a Laryngotracheitis virus which is spreader all over the world. A method which is challenge natural was estab-

lished by means of sentinel chickens which is contaminated with Laryngotracheitis virus and made a vaccine and Presence of vaccine virus in the fecal material and tracheas of exposed poultry birds are determine by nested PCR test [48]. The usual poultry litter treatments which is Commercial is heat the litter for 24 hours at 38°C, and create compost of poultry litter to reduce inactivated Laryngotracheitis virus in house. These litter, management methods and treatments swabbing of sentinel birds are used in poultry to control Laryngotracheitis virus vaccine outbreaks in broilers and may reduce severity of viral pathogens as well. The feasibility of excluding Laryngotracheitis virus infection from flocks of chickens on small scale poultry farming and poultry industries should be assessed [49]. Over the next decade for avian vaccines are in need and Demand will inevitably increase, but facilitate eradication or exclusion of pathogens from small scale poultry farming and poultry industries. The vaccines were developed to control the Laryngotracheitis virus and generally served the small scale poultry farming and poultry industries [50].

Laryngotracheitis is a acute respiratory disease and highly contagious of poultry chickens distributed all around the world and Laryngotracheitis affects egg production and meat production leads to noteworthy economic losses for the poultry farmers during the diseases [51]. The locus of Laryngotracheitis virus was used for insertion of foreign DNA of highly pathogenic avian influenza virus under control [52]. From all the poultry sample birds Tracheal swabs were collected repeatedly for the virus culture. At post-inoculation, birds were killed and tissues where used for detection of virus by organ culture, homogenization and culture, polymerase chain reaction and indirect immunofluorescence [53]. Presence of TK gene of Laryngotracheitis virus was detected by PCR in trigeminal ganglia of birds from this we conclude trigeminal ganglion is the main location of Laryngotracheitis virus [54].Laryngotracheitis virus transmission of birds usually from infected to susceptible birds and some transmission was recorded, despite birds being housed closely [55]. Laryngotracheitis virus Symptoms are milder forms of are conjunctivitis, nasal discharge, and reduced egg production, and severe forms are in addition categorized by coughing, gasping, expectoration of bloody mucus, and marked dyspnea [56]. Vaccine for Laryngotracheitis virus should be checked under field conditions to practicality determine its efficacy [57]. Field isolates of infectious Laryngotracheitis virus and differentiation of vaccine strains amplified from Laryngotracheitis virus.

## 7. Miscellaneous Disease

Infectious Laryngotracheitis is still a problem in many areas. Outbreaks occur in vaccinated as well as in non-vaccinated flocks. The occurrence of the disease in vaccinated flocks raises the question as to whether it is due to variant types of virus, misdiagnoses, deficiencies in the vaccine or failure to properly administer the vaccine The virus produces small gray plaques on the membrane in about 3 days [58]. These areas of thickening become larger up to the 5th to 7th day when the embryo usually dies. Additional laboratory tests have indicated that 146 virus is that of infectious Laryngotracheitis. There do not appear to be any differences in the antigenicity of the several viruses tested although there are minor differences in the clinical response of the host [59]. Genotypic and Phenotypic classification of the resistance of antimicrobial Escherichia coli strains were isolated for the period of 1999–2001 from swine, cattle and poultry. The widespread spreading of integrons on resistance of Escherichia coli and give emphasis to high potential of antibiotic resistance on efficient spread [60]. There was high lacked interesting in the finding of strains, and defective integrons have lacking some genes usually located been described. C. jejuni ecology and Epidemiology in broiler flocks assesses the information of measures to prevent flock colonization by potential effectiveness of targeted biosecurity [61]. Control of C. jejuni used is as Salmonella control in poultry in the same environment. The wide-reaching happening of several putative virulence genes isolates colibacillosis from Escherichia coli. [62]. Necrotic enteritis re-emergence is the most substantial threat for farmers of poultry industry, which causes high mortality in clinical form, and affects feed conversion and growth in subclinical forms.Disease control and prevention programs are limited in the poultry industry, with respect of any part of the world, and due to therapeutic failure, high mortality rates are common, due to transferable drug resistance associated with treatment failures. Serious constraints to poultry industry farmers are inadequate coverage of vaccination schedules and housing in the study area.

## 8. Conclusion

Based on studies of the veterinary services, poultry sectors, and potential strategies for controlling several diseases in Thailand, Indonesia, Cambodia, Lao PDR, and Viet Nam and all other countries, we listed in this paper. 8 days to 21 days aged Chicks are highly exposed to multiple diseases, and furthermost ubiquitous diseases like coccidiosis, IBD, Salmonellosis ND, Mycoplasmosis and Aspergillosis mandate instantaneous attention for the control and prevention of fatal death of poultry animals. There are various factors for which vaccination failure are classified as a) vaccine administration b) bird condition and c) storage, vaccine type, and handling. There was high temperature on the vaccination days which is revealed from the history of vaccination. There is a need to create awareness on education of poultry farmers on management better housing system, and adequate vaccination program. Which will create eradication, disease control, and profitability to poultry farmers. A deficiency of or increase production of, or synthesis, or failure in the production, or hormone, transport of an enzyme, or secretory mechanism. rapid growth, High nutrient intake, pulmonary or systemic hypertension, high metabolic rate, and a rapid increase in egg production high egg production or.(a) nutritional deficiency or excess; (b) infectious agents; (c) management defects; (d) toxins. By vitamin C, we can reduce metabolic heat production, a usual dark/ light cycle will improves broiler health and increase melatonin production and energy metabolism as well as well-being and immune function. Increased fragility will be the result of the fat in the liver.

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