INTRODUCTION

In the last few years the poultry industry and as a consequence chicken meat represents 80 percent of the whole production of meat originating from birds still, production is the fastest growing in the meat industry. According to analysis, production, as well as consumption of chicken meat, will rise because of good feed conversion in comparison to other animal species, there is not religious aspect of poultry meat consumption, poultry meat is healthy (low fat and high protein content), has good sensory qualities, low price and fast production which mean a short generative time. Poultry diseases represent a significant restraint to the efficiency of production and hence profitability. From a global perspective basically the same range of poultry pathogens are responsible for losses in livability, egg production, growth rate and feed efficiency worldwide (Shane, 2004). A poultry farmer who wants top performance from his/her broilers flock must satisfy the birds requirement through a carefully controlled management programme which includes proper housing, lighting, nutrition, disease control and egg handling (Goodell, 1981).

Coccidiosis is an ubiquitous disease of almost universal importance in poultry production. The disease may infect any type of poultry in any type of facility and causes large economic losses estimated to cost the industry more than $ 800 million (Rs 48000 million ) in annual losses worldwide (Williams, 1998). These estimates include the costs of prophylactic in-feed medication for broilers and broiler breeders, alternative treatments if medication fails, and losses due to mortality, morbidity, impaired growth rate, temporary reduction of egg production in layers and poor feed conversion of chickens that survive outbreaks.

Chicken coccidiosis is an intestinal infection caused by the intracellular protozoan parasite of the genus Eimeria. Nine species have been recognized to infect chickens: Eimeriatenella, Eimerianecatrix, Emeriaacervulina, Eimeria maxima, Eimeriabrunetti, Eimeriamitits, Eimeriamivati, Eimeriahagani, and Eimeria praecox (Prasad, 2008). Each species has its own characteristics with respect to preferred site of infection, pathogenicity and immunogenicity. In India JadHAVet al (2012) reported that there are three new species i.e. Eimerianikamae, Eimeriatarabaie,
Eimeriashivpuri, were recorded in Broiler chicken from Aurangabad district of Maharashtra.

The life cycle of Eimeria comprises intracellular, extracellular, asexual and sexual stages, so it is not surprising that host immunity is also complex and involves many facets of nonspecific and specific immunity (cellular and humoral immune mechanism) (Lillehoj, 1998), and their pathogenicity varies in birds of different genetic background. Therefore, in the natural host, the immunity is species specific (e.g. chickens immune to one species of Eimeria are susceptible to others). Additionally, Eimeria species exhibit different tissue and organ specificity in the infected host, so, understanding the interplay between the host and the parasites in the intestine is crucial for the design of novel control approaches against coccidiosis (Dalloul and Lillehoj 2005). The introduction of alternative prevention measures such as non-chemical feed supplements that effectively enhance productivity and non-specific immunity may help to limit the use of anticoccidials in control of chicken coccidiosis.

Poultry, during coccidiosis and after therapy, have poor productive results, daily feed quantity and feed conversion rise. Chicken daily growth weight is reduced, as well as body mass at the end of the fattening period (Jordan, 1990; Vermeulen et al., 2001). As a result the fattening period should be prolonged. At the same time, care should be taken for the withdrawal period for the drug which further rises costs of production (Jordan, 1990; Williams, 2002).

Bera et al(2010) Evaluated and concluded the economic losses due to coccidiosis in poultry industry in India where refers that the most important parameters in broiler industry are the reduced body weight gain and increased FCR, both of which come under sub-clinical effect. For calculation of profit/loss of broiler industry, these are two important parameters and coccidiosis affects adversely to these parameters, the reduced body weight gain and increased FCR share 71.21 per cent (Rs 775648,500) and 23.74 per cent(Rs 258549,500), respectively in the total loss from coccidiosis to broiler industry. Chemoprophylaxis is another considerable important parameter through which a total amount of Rs 30819,262 (2.83%) has been spent annually by broiler industry of India. The expenses on chemoprophylaxis, a common practice for
commercial broiler and some part of commercial layer, broiler breeder and layer breeder, have been found as Rs 54630,712 (4.80%). Loss due to chemotherapy and mortality during outbreak of coccidiosis are common parameters for all type of birds and have caused loss of Rs 19351,290 (1.70%) and Rs 9700,987 (0.85%), respectively. Reduced egg production, considered only in commercial layer and both types of breeder has caused 1.49 per cent loss (Rs 17023, 100) in the total annual loss from coccidiosis for the year 2003-04. The cost of vaccination has been found only Rs 4321,500 (0.38%) in 2003-04. prevention of coccidiosis in India mainly depends on chemoprophylaxis, which is leading to a further problem of drug resistance and drug residue in consumable meat and egg. Thus, for preventive measure, the total expense has been 5.18 per cent in the annual loss from coccidiosis in poultry industry in India (Bera et al(2010). The total loss of poultry industry has been found to be Rs 1139225,589 or Rs 1.14 billion (approx) due to only coccidiosis for the year 2003-04, which shows need of immediate attention to prevent national loss.

**Use of anticoccidial drugs**

The effective use of anticoccidial drugs over the past 50 years has played a major role in the growth of poultry industry and has allowed the increased availability of high quality, affordable poultry products to the consumer.

Numerous products were introduced, many of which are available and used today. However, there is increasing concern about rising levels of drug resistance (Chapman, 1997). The anticoccidial drugs can be classified as:

1- Synthetic drugs (chemicals).

2- Polyether ionophores.

1-Synthetic drugs have specific modes of action against parasite metabolism, sulphamides and related drugs compete for the incorporation of paraaminobenzoic acid (PABA) and metabolic of folic acid, amprolium compete for absorption of thiamine by the parasite. Quinoxaline and clopidol inhibit energy metabolism in the cytochrome system of coccidia. The quinolones and ionophores arrest or kill the sporozoite or early trophozoite, nicarbazin, robenidine and zoalene destroy the first or second generation schizonts and the sulphonamides act on the...
developing schizonts and also on the sexual stages. The ionophores kill coccidia by interfering with the balance of important ions such as sodium and potassium. The host cells are able to manage these ions in the presence of ionophores, but the parasites cannot. Synthetic drugs: were introduced first, then the ionophores followed and are now an important component of coccidiosis control. (Chapman et al, 2004) reported that combinations of anticoccidials such as salinomycin and roxarsone with a digestive enhancer such as bacitracin are widely used in the starter and grower feeds of broilers for control of coccidiosis and improvement of growth in broilers (Chapman and Johnson 2002).

It is quite clear that some degree of resistance to all anticoccidial drugs, including ionophores, has developed (Chapman, 1999). To minimize the effects of resistance, poultry producers rotate the use of various anticoccidials with successive flocks, where drugs from different classes are used sequentially on a single crop of birds, one class might be used in starter feed, another in growers, returning to the first for the finisher diet, followed by a withdrawal diet (Sangster, 2001).

2. Polyether ionophores: Since 1971 the preferred drugs for coccidiosis prevention have been ionospheres antibiotics. These drugs still achieve sufficient control despite resistance being common; for example, salinomycin, narasin, monensin, lasalocid, maduramicin and semduramicin remain useful agents except in situation of heavy parasite challenge (Chapman, 1997). The advantage of such ionophores is that they prevent infection during the first 3-4 weeks of age when immunity is not developed, such use limits the increase of infection pressure due to the expanding field strains during the development of immunity, which further reduces the overall risk of contracting coccidiosis (Vermeulen et al. 2000; 2001). It is known that coccidiosis is aggravated by microflora, for example.

The dietary administration of coccidiostatic drugs, predominantly polyether ionophore antibiotics, over the last four decades, has in part provided the basis for the rapid growth of the poultry industry and the increased availability of high quality, affordable poultry products to the consumer. However, some interrogations have been expressed regarding the routine use of these antibiotics in food, mainly due to the emergence of resistant coccidian strains (Chapman, 1986). If the use of anti-coccidian
food additives was withdrawn, alternative feeding strategies should probably be introduced to offset any possible adverse effects on production.

**Alternative controls including or natural-feed additives**

Recently, research has become more focused on the use of naturally occurring phytobiotics in replacing the chemically based feed additives (Herawati and Marjuki, 2011). Some phytogenic feed additives have been successfully incorporated into the feeding standard of poultry birds without any deleterious effect or toxic residues (Oyekunle and Owonikoko, 2002).

There are a number of non-therapeutic alternatives such as enzymes, inorganic acids, probiotics, prebiotics, medicinal plants and other management practices (Banerjee, 1998). A number of dietary herbs, plant extracts and essential oils have been studied for their antimicrobial and growth promoting abilities in poultry (Cross et al., 2007).

When incorporated into broiler diets, some herbal supplements have improved growth performance, feed conversion efficiency, carcass and meat quality in broilers, with reduced feed cost (Huang et al., 1992). Moreover, active components of herbs may improve digestion and stimulate the immune function in broilers (Ghazalah and Ali, 2008).

Natural medicinal products as feed supplements have been widely used as growth and health promoters in farm animals in China (Li, 1998). A current estimation of the number of immunoactive natural medicinal products ranges between 200 and 300 and most products originate from plants and fungi (Li, 2000). The immunoactive components of these plants and fungi include polysaccharides, glycosides, alkaloids, volatile oils, and organic acids, of which polysaccharides are considered to be the most important (Xue and Meng 1996; Li 2000). Polysaccharides may act as immune enhancers or immunomodulators, and these components may display antibacterial activity (Xia and Cheng 1988) and could affect both innate and adaptive immunity including cellular and humoral responses (Lien and Gao 1990). Also some mushrooms and herb polysaccharides which were used as feed supplements or
vaccines adjuvants showed antibacterial (Yuan et al. 1993) antiviral (Yu and Zhu, 2000), or antiparasitic (Pang et al. 2000) effects.

A zadiracha indicia, commonly known as neem, has attracted worldwide attention in recent years, owing to its wide range of medicinal properties. The utilization of several leaf meals as feed ingredient to reduce production cost in poultry diet is not new but the inclusion levels at various ages and physiological conditions varies (D’Mello and Acamovic, 1987; Udedibie and Operas, 1998; Nworgu, et al., 2003; Kakeni, et al., 2007; Iheukwumere, et al., 2007; Onyimonyi, et al., 2009). The neem has been utilized for its medicinal properties for centuries in India, but only in recent years has it come to the attention of the world.

The neem(Azadiractaindica) belonging to the Meliaceae family and a fast growing evergreen tree has a potential to provide medicinal and nutritive value to broilers (Schmutterer, 1995). Various parts of the tree have been reported to contain chemicals like azadiractinnimb, nimbindin, quercetin among others (Makeri, H.K et al 2007), which have antimicrobial, antihelminth, antioxidant (Gandhi, M.R., et al 1988, Blaney, et al 1990) antifungal, insecticidal, antiprotozoa and spermicidal (Elangovan, A.V. et al 2000) properties. It’s originally from India that can reach up to 30m tall and live up to 200 years. The inhabitants of India and Asian countries use the extract of the leaves and the oil extracted from the seeds for more than 2,000 years as fertilizer of soil and pest control in agricultural and livestock.

Neem possess Limonoids, protolimonoids, tetranortriterpenoids, pentanortri-terpenoids, hexanortriterpenoids, and some nonterpenoid (Koulet al., 2006). Dry leaves of Neem are beneficial in IBD affected broilers (Sadekaret al. 1998).

Poultry industry in India

India is one of the world’s largest and fastest to growing poultry industries, ranking third in hen egg and sixth in broiler meat production. According to Ministry of Food Processing Industries, about 70% of poultry is in the organized sector and in the unorganized sector. Broiler production are grew at an annual percentage growth rate of 8.35% from 2001 (1.25 million metric tons) to 2010 (2.65 million metric tons). Per capita consumption has grown from 1.22 kilograms in 2001 to 2.26 kilograms in 2010.
India's egg production is anticipated to reach 61.5 billion eggs, up to 68% from 36.6 billion in 2001 (Basic Animal Husbandry Statistics 2010, India). As per the estimates provided by the Food and Agriculture Organization (FAO) for 2007, the value of poultry exports was around Rs(441) crore during 2007-08 (Economic Survey, 2009). Coccidiosis is one of diseases of poultry that play inhibitory role in the growth of this industry.

**Poultry industry in Iraq**

Broilers Chicken (alive): Iraq product was estimated (87156) ton for 2011 with increase (34344) ton of gross Iraq product for 2010 which was (52812) ton with increase percentage (65.0%) this is because increase in number of projects for this year percentage (21.8%) & the stability of security situation. Private sector project production was estimated (86977) ton percentage (99.8%) of Iraq gross product while public sector was estimated (179) ton percentage (0.2%) of Iraq gross product this shows that product focus on private sector which is consistent with the state policy to support private sector. Public sector contribution was insignificant and the gross product doesn't meet with the need of local markets and the deficit was filled through import. Cost of one kilo was estimated (2328) (ID/ kg) this cost is very adequate with prevailing prices in local markets which provide a reasonable profit for meat producers and mediators that balanced with the consumer price. Amount of eggs in Iraq was estimated (1018.8) million eggs for 2011 with increase (92.6) million eggs of Iraq gross product for 2010 which estimated (926.2) million eggs with percentage (10.0%). (Poultry report for 2011- Iq).

**Justification**

Coccidiosis is a parasitic disease that is a constant health problem, especially in intensive poultry industry. It is the most important infectious poultry disease, as far as economy is concerned. Coccidiosis is a global disease and costs on yearly basis, for prophylaxes, as well as therapy exceed two billion Euros (Dallouil and Lillehoj, 2006).

Because of coccidiosis, carcass yield is smaller, as well as the proportion of more valuable parts of the body. Also, fat deposits are smaller in the abdominal fat tissue.
In broilers’ meat, there is higher water content and less proteins. Relative proportion of proteins of the fibrinous tissue in the total protein mass is higher. Sensory characteristics of the broilers’ meat are bad in comparison to the population where coccidiosis was absent.

More than 50 years anticoccidial feed additives have been used to prevent or treat coccidiosis in poultry. Although there is a rising problem of drug resistant strains of *Eimeria*. In addition the use of live vaccines for control of coccidiosis is also well established (Williams, 2002). Vaccination of broiler has rarely been practiced because even light infection with some species of coccidian can effect weight gain, feed conversion, and pigmentation of skin. Also in the absence of anti-coccidial drugs, there is susceptibility to higher incidence of clostridial infections resulting in necrotic enteritis an ass well vaccination is an ineffective treatment for coccidiosis.

Because of the pressure by the consumers to avoid chemotherapeutics, the high development costs and low profits, the pharmaceutical industry is reluctant to develop new anticoccidial products (Chapman, 1997). Thus, alternatives have been sought and are still being sought Erika et al., (2013) demonstrated that new bioactive natural substance may be of great value for the control of animal health and food safety due to the possibility to decrease the quantity and frequency of use chemicals.

Neem (*Azadirachtaindica*) is the most useful traditional medicinal plant and a valuable natural product for the development of medicinal recipes against various diseases (Biswas et al., 2002). Neem powder derived from both the seed and the leaf is used to treat animal diseases such eye infections, coccidiosis and Newcastle disease in poultry.

Programs used of anticoccidial drugs in broiler is usually to produce the maximum growth and feed efficiency with minimum of disease. Today almost all broiler flocks receive preventive medication (Anticoccidial feed additives), treatment is used as a last resort. Therefore an experiment entitled "Effect of coccidiostat on performance of broiler chicken in Allahabad" was designed to observe the effect of different coccidiostat namely, Amprolium, Salinomycin and NeemLeaf Powder (NLP) alone or in combination as feed supplementation on performance of broiler chicken in March 2014.
Objectives

1- To determine weekly body weight of broiler chicks fed on ration supplemented with different coccidiostats.

2- To determine weekly gain in weight of broiler chicks fed on ration supplemented with different coccidiostats.

3- To determine weekly feed consumption of chicks fed on ration supplemented with different coccidiostats.

4- To determine weekly feed conversion ratio of chicks fed on ration supplemented with different coccidiostats.