Introduction
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India is predominantly an agrarian country with nearly three fourths of the people dependent on agriculture or rural economy. After the green revolution, Indian agriculture has experienced a breakthrough in food grain production leading the country from deficit and import arena to the positive situation of self-sufficiency and buffer stocks. But the quality of foods and feeds consumed by humans and animals is questionable. This is due to the presence of "mycotoxins", the natural, nearly universal and unavoidable contaminant of foods and feeds. Mycotoxins are toxic secondary metabolites of certain fungi and cause illness or death when ingested by animals or human beings (Qazi and Fayyaz, 2006; Murphy et al., 2006). One of the most toxic group of mycotoxins are the aflatoxins (AFs), produced by Aspergillus fungi. Among the naturally occurring aflatoxins, aflatoxin B1 (AFB1) is the most predominant, toxic and carcinogenic compound and has been classified as class 1A human carcinogen by the International Agency for Research on Cancer (IARC, 2002; Wild and Turner, 2002).

Aflatoxins are most prevalent in areas located between latitudes 40° N and 40° S of the equator. They are detected in a wide range of commodities including cereals (maize, sorghum, pearl millet, rice, wheat), oilseeds (peanut, soybean, sunflower, cotton), spices (chillies, ginger, pepper, coriander), tree nuts (almonds, pitachio, walnuts, coconut) as well as dried fruits (Bankole and Mobekooje, 2004; Koirala et al., 2005; Oliveira et al., 2006).

Over 5 billion people in developing countries worldwide are at risk of chronic exposure to aflatoxins through contaminated foods (Shephard, 2003; Williams et al., 2004). Lopez et al. (2002) reported AFB1 in serum of patients with hepatic disease while Williams et al. (2004) showed AFB1 in breast milk.
Epidemiological studies have identified chronic infection with hepatitis B virus (HBV) and dietary aflatoxin exposure as two major etiological risk factors for the development of hepatocellular carcinoma (HCC) (Kew, 2003). HCC accounts for 5.5% of all cancer cases worldwide (Kensler et al., 2003) and is one of the most common cancers in Asia, Africa and in groups of Asian and Hispanic Americans (Farombi, 2006). In 2004, one of the largest, more severe aflatoxicosis outbreaks occurred in Kenya, which has resulted in 125 deaths among 317 cases of poisoning (CDC, 2004). AFB1 also causes immunosuppression (Turner et al., 2003) and growth depression in humans (Gong et al., 2002).

AFB1 is genotoxic in prokaryotic and eukaryotic system in vitro, including human cells and in vivo in humans and in a variety of animal species. It forms DNA and albumin adducts and induces sister chromatid exchange and mitotic recombination (Guo et al., 2005). Aflatoxins can cause structural and numerical chromosomal aberrations, which include chromatid gaps, chromatid breaks, centromeric alterations, deletions and fragmentation in the bone marrow cells and germ cells (Tong et al., 2006).

Among different species, poultry are highly sensitive to the toxic effects of AFB1. The most conspicuous poisoning effects observed in poultry are liver damage, growth retardation, immunosuppression and mortality (Oguz et al., 2000a; Oguz and Kurtoglu, 2000; Agag, 2004). Moreover, consumption of AFB1 contaminated feed results in the carryover of toxic metaboites of AFB1 into the poultry products - meat (Bintvihok and Davitiyananda, 2002) and eggs, which exert immunosuppressive, embryotoxic and teratogenic effects (Celik et al., 2000; Oliveira et al., 2000). Production losses in poultry can occur even at low levels of exposure to aflatoxins in feed. The economic losses have been associated in terms of reduced
productivity such as lowered egg production, reproductive effects, susceptibility to infections resulting in increased morbidity and finally mortality (Reddy et al., 2000).

In India, poultry industry is one of the fastest growing sectors and it is highly dependent on the commercial feed, which is continuously exposed to aflatoxins (Caldier, 2007). Although a few studies have provided estimates of exposure of poultry to aflatoxins during nonoutbreak periods (Reddy et al., 2000; Thirumala Devi et al., 2002), much information is not available concerning baseline levels of chronic exposure of poultry to aflatoxins particularly in Tamil Nadu. A survey on the AFB1 levels would fill the gap between exposure and steps to minimize toxic effects.

In developed countries, harmful exposures to AFB1 have been mostly eliminated by strict preharvest and postharvest strategies (Guo et al., 2000). The application of these strategies in developing countries is difficult, given differences in technology, agriculture and trade practices, as well as other issues contributing to occurrence of aflatoxins and incidence of exposure (Williams et al., 2004).

Medicinal plants, often serve as hepatoprotective agents in the prevention of toxicity caused by certain drugs and environmental chemicals wherein toxic mechanisms are believed to play an essential role. But the studies on use of medicinal plants and plant extracts to overcome AFB1 induced toxicity are limited (Wahhab et al., 2006; Preetha et al., 2006).

*Moringa oleifera* Lam, a perennial tree, native to India is used both as a source of food and medicine. The leaves and drumsticks of *M. oleifera* are rich sources of β-carotene and vitamin C (Nambiar and Seshadri, 2001) and have been shown to possess antioxidant and hepatoprotective properties (Sidduraju and Becker, 2003; Nadro et al., 2006).
*Aloe barbadensis* also known as *Aloe vera* is one of the perennial herbs that originated in the tropics and has been used mainly for cosmetic purposes from ancient times. Only in the recent years it has gained increased attention owing to its various other medicinal properties including hepatoprotective and antioxidant effects (Hu *et al.*, 2003; Etim *et al.*, 2006).

Scientific documentation of the effectiveness of *M. oleifera* and *A. vera* against AFBI would provide a fundamental knowledge for further studies. It is known that AFBI is carried through food chain. Therefore, the toxic effects associated with consumption of AFBI contaminated feed does not end up with poultry, but it also affects humans. Any study that involves feeding aflatoxin in humans is not possible. On the other hand, the experimental data obtained in rats could be extended to humans. Hence, it would be appropriate to study the role of *M. oleifera* and *A. vera* against AFBI toxicity in rats and poultry. The present work, “Protective effect of *Moringa oleifera* and *Aloe vera* on Aflatoxin B1 induced toxicity” was taken up and performed in three phases with the following objectives:

**Phase I**

- To collect various poultry feeds and feed ingredients from areas in and around Coimbatore, Tamil Nadu and screen them for AFBI contamination and quantify it.

**Phase II**

- To study the biochemical and histopathological profile in rats induced with AFBI toxicity.

- To assess the effect of supplementation of selected plant products of *M. oleifera* and *A. vera* in rats induced with AFBI toxicity.
Phase III

➢ To study the biochemical and histopathological profile in broilers induced with AFB1 toxicity.

➢ To assess the effect of supplementation of selected plant products of *M. oleifera* and *A. vera* in broilers induced with AFB1 toxicity.