INTRODUCTION:

Mites are very diverse and wide spread groups of animals which can be found almost in all the habitats known on the earth. In the words of Schauff (2000), they are "ubiquitous, inconspicuous, harmful and helpful". More than 48,200 species (Schauff, 2000) have so far been identified from the world, of those some are plant feeders, some are fungivorous, some are coprophagous, some are saprophagous and some are carnivorous, some are blood and lymph suckers while there are many whose feeding habits are still unknown. Regarding habitats, the majority of mites are free living but thousand of species are there which parasitise plants and animals, while other serves as both reservoirs and vectors of serious pathogens causing rickettsial pox, protozoans, bacterial, spirochaete and viral diseases to livestock and human beings on one hand and on the other hand act as vectors of virulent of plant viral diseases. Needless to mention, all these cause colossal economic loss. Among different groups of mites, house dust mites have earned a world wide interest among acarologists and entomologists in general and medical entomologists in particular because of their intricate association with human beings and this association is of great concern as certain species of mites play a significant role in public health such as Sarcoptes scabiae causes scabies, Demodex sp. causes demodictic mange to man and other animals and often causes dermatitis. Several other species of mites have been implicated as causal factor of contact dermatitis in persons handling infested grains. For example Copra-itch (Tyrophagus putrescentiae), Baker's itch (Acarus siro), Grocer’s itch (Glycyphagus domesticus) etc. However, since the 1900s it has been established that the house dust, complex mixture of human dander, debris from wool, feathers, hairs, insects, cotton, milk, jute and synthetic fibres, carpets, beddings, furnitures and upholstery, fungal spores, pollens, bacteria, microorganisms and shedding from other house hold articles, play a significant role to cause sneezing and wheezing in sensitive individuals. Kern (1921) and Cooke (1922) first of all pointed out the role of house dust in causing respiratory allergy.
and suspected the presence of distinct allergen in it. However, during sixties, it has been established that house dust mites especially belonging to the family Pyroglyphidae are a source of allergens that lay a significant role in different allergic disorders like allergic rhinitis, hay fever, eczema and in extreme cases bronchial asthma. (Voorhorst, 1964; Spieksma–Boezman, 1967; Wharton, 1976; Charlet et al., 1977; Feldman- Muhsan et al., 1985; Hurtudo & Parini, 1987; Pletts-Mills et al., 1992; Fernandez-Caldas et al. 1993; Carswell, 1995; Saha, 1993, Warner et al., 1999; Eggleston and Bush, 2001 and Podder et al., 2006). These mites are free living and found in every corner of the house and are more abundant in beds than elsewhere, as beds contain much more human skin scales on which they feed (Spieksma, 1967; Larson et al., 1969; Bronswijk, 1972) and also provide ideal microclimate such as temperature and humidity which are favorable for mite population growth and multiplication of mite population (Chew et al., 1999). There has been a substantial increase in the incidence and prevalence of nasobronchial allergic disorders, affecting 12-20% of the population worldwide (Smith, 1983). The situation is worst in most of the less prosperous and developing countries with weak economic condition. In India, 10 million people suffer from asthma and another 15 million from other recurrent allergic diseases (Podder et al., 2006). There are many factors such as living habits, occupation, humidity, climate, home standards and ventilation which have been attributed to such increase of various nasobronchial allergic disorders (Koosgaard, 1998).

**What is an allergy?**

The term “allergy” was first coined by Van Piquet in 1906 from the Greek words “allos” means other and “ergon” means action; hence the “other action” or “altered reaction”. According to him, it is a change responsiveness of individuals, who have previously been exposed to an antigen (allergens). The second time exposure to that antigen resulted in altered responsiveness. The majority, however, prefer to describe
allergy as an immunologically mediated state of hypersensitivity that is damaging the body.

In the year 1922, Coca coined a term “Atopy” to describe a form of clinical allergy which is of inherited nature. Patients with atopy have a hereditary tendency to produce reaginic antibodies (IgE) in higher amount after normal exposure to substrate (atopens), which are otherwise harmless to normal persons. Atopic persons have an increased risk of developing asthma, urticaria, atopic eczema and rhinoconjunctivitis.

**Mechanism of allergic reaction:**

When an individual is immunologically primed, further contact with antigen leads to secondary boosting of the immune response. However, the reaction may be excessive leading to gross tissue damage (hypersensitivity), if the antigen is present in relatively large amounts or if the humoral and cellular immune state are at higher level.

On the basis of different immunological mechanisms, Gell et al. (1977) classified the allergic reaction into 4 distinct classes:-

1. Type –I reaction (Immediate hypersensitivity)
2. Type –II reaction (Cytotoxic)
3. Type – III reaction (Immune Complex mediated reaction)
4. Type –IV reaction (Delayed hypersensitivity)

In case of nasobronchial allergic disorders, Type- I hypersensitivity reaction that is immediate reaction occurs in our selves. The reaction occurs in the following steps.

1. **Sensitization phase:**

   Sensitization to a particular antigen is dependent on stimulation of IgE antibody production. This requires CD4+ Th2 cells to induce class switching of antigen specific cells and to secrete IL-4 for B- cell growth and differentiation.
2. **Effector phase:**

IgE antibody produced following initial contact with the specific antigen (like pollens, dust, dust mites etc.), with the specific antigen, bind to IgE receptors on mast cells and basophils. Crosslinking by antigen of the IgE and the receptors with which it is associated, results in rapid degranulation and release of pharmacological mediators (eg. histamine) causing local inflammation. These powerful mediators act on different organs of the body resulting in various manifestations of allergic diseases. Among them, the lung is recognized as the most important and vulnerable target in immunologic diseases. When this reaction occurs in the lung, the resultant effect is asthma.

The bronchi of the subject with asthma are sensitive to many external stimuli. According to Cockerof et al. (1977) the degree of hyperresposiveness may increase in subjects with asthma after deliberate exposure to inhaled allergens.