

***Nosema ceranae*: A Newly Emerged Microsporidia in Honey Bee Colony in Khyber Pakhtunkhwa Pakistan**

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INTRODUCTION

Honey bee is the most crucial pollinator for ensuring world food services and other hive products, thereby increasing global economy to billions of dollar every year. Unfortunately, honey bees are facing enormous threat worldwide from environmental stress, pathogens including *Nosema*. Nosemosis is one of the most pathogenic fungal diseases of adult honey bees (*Apis mellifera*), caused by unicellular microsporidia; *Nosema ceranae*. The presence of *Nosema* is potentially more dangerous because it has the ability to decline bee population as it shortens the life span of the worker bees which in turn reduces honey production and causes incomplete crop pollination. Today *Nosema* is predominant throughout the world in every beekeeping country. In Pakistan, there is no information reported regarding nosemosis.

OBJECTIVES

Aim of the current study is to evaluate the presence of nosemosis in honey bee population in Khyber Pakhtunkhwa.

METHODOLOGY

The precise number of *Nosema* suspected adult bees were collected from various apiaries of *Apis mellifera* located at the southern regions constituting three districts (Kohat, Karak and Bannu) of Khyber Pakhtunkhwa. Microscopic analysis technique was adopted for detecting *Nosema* spores.

CONCLUSIONS/RESULTS

Amongst 850 colonies, 492 symptomatic samples were analyzed and observed that include 242 (49.18%) bloated abdomen, 152 (31%) K shape wing and 99 (20.12%) bees dwindling in front of hive. Microscopic findings showed higher incidence of infection in district Kohat honey bees followed by other southern regions of Khyber Pakhtunkhwa. The current study revealed that fungal infections in the bee population are prevailing. Significantly, this study appears to be the first to report *N. ceranae* in *A. mellifera* population in Pakistan. Concluding this, our current/ongoing research practice not only gives new insights into the pathogen web of honey bees, but also demonstrates that the honey bee gut is a niche of interesting pathogenic microbes. The prospectus of future research and remaining unresolved questions associated with the honey bee *Nosema* diseases are in progress.

KEYWORDS

Apis mellifera; Incidence; Khyber Pakhtunkhwa; *Nosema ceranae*.

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