Pest Control Newsletter

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A short overview on some common mites

Mites are tiny animals with 8 legs at the adult stage, typically for crawling. Unlike spiders and scorpions, mites do not have a distinct abdomen, and most body segments of a mite are fused into the sac-like idiosoma. Mites can be found in a wide variety of environments. Some mites live in close association with warm-blooded animals, insects and other arthropods; while others feed on plants, bacteria and fungi. A small number of mites may affect human health. In our local situation, four groups of mites with public health significance can be found commonly.

House dust mites

Though allergy in some people is resulted from other agents (such as pollen grains, cosmetics, nickel products, animal hair, or polluted air), house dust mites (mainly Dermatophagoides pteronyssinus and Dermatophagoides farinae) can also induce allergy in the household, leading to asthma and dermatitis. In fact, the allergic effects of dust mites are believed to be caused primarily by their faecal pellets. These mites often live on skin flakes, fungi, bacteria and other organic matters; and survive well in carpets, pillows and mattresses. Dust mites can be controlled by various methods, such as appropriate cleaning and washing, reduction in humidity and temperature, and the use of fabrics which are impenetrable to mites.

Follicle mites

Follicle mites, in the genus Demodex, are tiny parasitic mites that usually live in or around the hair follicles of mammals. Two species, namely Demodex folliculorum and Demodex brevis, can be found on human cheeks, eyelashes and foreheads. While some research suggested that Demodex mites might have certain association with human skin conditions such as acnes, the casual relationship remains controversial, partly because Demodex mites are also found on people without such conditions, including a majority of the elderly. Attention to personal hygiene with regular cleaning of body might help to prevent the attack by these mites. A medical doctor has to be consulted in case treatment is necessary.

Chigger mites

Trombiculid mites often live on rodents during their hexapod larval stage, and the common name "chigger mites" refers to this stage. These tiny red larval mites can also attack human, and an itchy red bump will appear within two days at the site of attack. Chigger mites in the genus Leptotrombidium may also transmit scrub typhus if they carry the pathogen Orientia tsutsugamushi. Scrub typhus is a notifiable infectious disease in Hong Kong. Travellers to rural areas are advised to adopt protective measures, such as wearing light-coloured long trousers, applying insect repellents (e.g. DEET) to clothing and exposed areas of the body as appropriate, and avoid walking along scrubby areas or tall grass where mites could reside. Postlarval stages of trombiculid mites do not serve as disease vectors. The deutonymph and the adult of chigger mites mainly feed on insect eggs, while the protonymph and the tritonymph (also called "nymphochrysalis" and "imagochrysalis" respectively) are inactive.

Scabies mites

As the common name implies, scabies mites (Sarcoptes scabiei var. hominis) are the mites that can cause scabies. They live on and inside human skin. Intense itching usually occurs at the infected area, especially at night; and scratching can result in secondary bacterial infection. Symptoms might persist for weeks even after successful treatment, because the allergic reaction is due to mites and their faeces inside the skin. Scabies is transmitted by direct contact, or occasionally by sharing towels, clothing, and bedding; thus prevention could be achieved by avoiding such contacts especially with suspected or confirmed infection. Contaminated textiles should be dry-cleaned, or washed in hot water and heat-dried in a drying machine.

C. K. YUEN, Assistant Pest Controller

Success of Cockroaches

Egg cases (ootheca) of Periplaneta americana (left) and Periplaneta australasiae.

Opisthoplatia orientalis. A non-pest species commonly found in outdoor areas with dense vegetation. It is used as Chinese medicine.

Common pest species in Hong Kong. (From left) Periplaneta americana, Periplaneta australasiae, Blattella germanica

Living Fossil

Cockroaches are one of the most successful life forms ever existed on earth. Fossil record reveals that modern cockroach lived as early as in the Cretaceous (about 145 millions years ago), well before the appearance of human. Without significant changes in their morphology, cockroaches survived the massive extinction that had led to the disappearance of nearly all dinosaurs. Nowadays, about 4500 known species of cockroaches can be found inhabiting a wide range of environments. Occupying from wild to domestic environments, and from hot wet tropical areas to regions with freezing winter, cockroaches have shown their extraordinary power of adaptation. The success of cockroaches is resulted from a number of physiological and behavioural factors.

Diet

Food is the most basic requirement for organisms to survive. Cockroaches can take virtually any organic substances as their energy source. Human food of both plant and animal origins is certainly suitable for them to eat. Non-food items for us such as wood, papers, glue for book bindings, excretions of human and animals are also food sources for cockroaches. In addition, cockroaches will also eat the dead bodies of the same species, mating partners and unfertilized eggs of their own. As a result, the lack of food is rarely encountered by cockroaches in reality. Even if this happened, cockroaches are able to survive for long time without food. It has been demonstrated that several hours of feeding is sufficient for domestic cockroaches to last for a whole molting cycle. Some species can even survive for months without food.

Lifespan and Reproduction

Cockroaches are long-lived among insects. Their lifespan ranges from several months to more than a year depending on the species. Cockroaches are also highly productive. A female cockroach can produce several hundreds to over a thousand offspring during their lifetime. After mating, a female cockroach can store sperm to fertilize several batches of eggs without the need to search for a male again. While some species use parthenogenesis as common reproduction strategy, others are able to develop temporary parthenogenesis when there is a shortage of mating partners. Cockroaches display certain degree of parental care, which can increase the survival rate of their offspring. Some female will carry the ootheca for some time to provide nutrients, moisture as well as protection to the eggs until shortly before the eggs hatch. There are also ovoviviparous species and at least one viviparous genus, which is not common in the world of insect.

Avoiding Danger

Most of the cockroach species are nocturnal. They hide in cracks and crevices in daytime to minimize exposure to many predators, such as wasps and birds, which are active during the day. Pest species may occupy the most objectionable environment to human, where they can find shelter and food. Sensory and nervous systems of cockroaches are well developed. They can sense the air movement created by their potential enemies and react quickly.

Regeneration of Body Parts

Cockroaches rely heavily on their six legs for accessing resources and escape from danger. If a leg is lost due to an attack or accident, they can regenerate the whole lost leg after a single molt but other insects may take several molts to complete the regeneration process. In fact, a cockroach can repair or regenerate any part of the body damaged or lost during the nymphal stage.

Role as Pest and Control Measures

The ability of cockroaches to utilize minimal resources efficiently makes them impossible to be eliminated. Those adapted to the live close to human have become one of the most difficult pests to deal with. To avoid cockroach infestation, food and waste should be properly treated and stored. Any cracks and openings that may allow cockroaches to pass or hide should be sealed. Environmental control could be supplemented with chemical treatment or trapping to achieve the best result.

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