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Confidential report for:

Campden BRI

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Report on:

Examination of an Insect Reported from Margarita Pizza

Work performed by Campden BRI (Chipping Campden) Limited
Report number: MI/REP/180025-025456 ♦ Issue date: 16th March 2018

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[DC: R-AC-9-5-15: 09/14 (16) : R/MCE]



SAMPLE DETAILS

Initial Complaint Date: 3/2/18
Complaint Reference: COOM7686
Purchase Order No.: HTFHEFB687

SAMPLE INFORMATION

Date sample(s) received : 28th February 2018
Packaging : In original packaging
Storage conditions : Chilled (+2°C to +5°C)
Date(s) sample(s) examined : 9th and 11th March 2018

METHODS AND REFERENCES

Analyst reference : GED, MB, IB
Method reference(s) : TES-AC-192 : Light Stereomicroscopy
TES-AC-193 : Compound Light Microscopy
TES-AC-238 : Determination of phosphatase activity in insect and other foreign bodies of biological origin
Deviations from the method reference(s) : None

RESULTS

The complaint sample consisted of an insect, which was photographed as received and can be referred to in Plate 1. Submitted alongside the insect was both an opened product packet with the contents removed and a sealed packet containing mixed nuts. Light stereomicroscopy of the insect revealed it to be in fairly good condition, but appeared to be slightly deflated at one end (see Plate 1). A small amount of surface deposit was seen adhered to the complaint sample, which was removed and examined under a compound microscope. Here it was possible to see gelatinised wheat starch granules (Plate 2), plant cells consistent with the skin of a tomato (Plate 3), and globular structures (Plate 4), consistent with dairy products such as cheese.

The insect was subcontracted to an expert entomologist, where it was keyed as a larval member of the species *Hofmannophila pseudospretella*, the brown house moth. This species is the only known member of the genus *Hofmannophila*. These moths originate from Asia but have been spread through trade to many parts of the world and are now considered cosmopolitan. Eggs are laid singly to prevent competition between individual larvae on a food source. They are able to feed on multiple

sources of food and their exact requirements are unknown. They can be found feeding on dried products, textiles, carpeting etc.

The development time of these moths in comparison to other stored product moths is very slow. At 20°C the egg will take 14 days to hatch, the larval period will last 78 days and the pupation time will take 25 days. At 25°C the egg will take 9-10 days to hatch, the larval period will last 71 days and the pupation time will take 15-16 days. The specimen appeared to be fully grown and would probably have been shortly preparing for pupation.

The complaint sample was received back from an expert entomologist in a wet condition, after having been rehydrated for identification. The moisture, to which the sample had been exposed, would provide suitable conditions for mould growth. Therefore, sections of the complaint sample were taken and examined under a compound microscope for the presence of mould. No obvious signs of fungal growth were seen and as such it was decided that a phosphatase test could be attempted. A phosphatase test can be used to help determine if an insect has been heat treated. Exposure to heat causes the phosphatase enzyme to be denatured and therefore absence of this enzyme can be used to indicate exposure to heat (for example cooking). If fungal growth was detected, this can cause a false positive for the presence of the phosphatase enzyme.

A phosphatase enzyme activity test was performed on the sample to determine whether the phosphatase enzyme was active or if it had been denatured. The complaint sample was tested against two positive controls, the first comprising of uncooked chicken, which contained the active phosphatase enzyme, and the second comprising of pure active phosphatase enzyme. It was also tested against a negative control, in this case water, which did not contain the phosphatase enzyme. A colour change to yellow was observed in both positive controls and the complaint sample; no colour change occurred in the negative control (Plate 5). This suggested that the phosphatase enzyme was still active in the complaint sample and that it had not been heat treated/cooked.

CONCLUSIONS

It was concluded that the complaint sample was a larval member of the species *Hofmannophila pseudospretella*, the brown house moth. This species is the only known member of the genus *Hofmannophila*. These moths originate from Asia but have been spread through trade to many parts of the world and are now considered cosmopolitan. The specimen appeared to be slightly deflated at one end, but overall it was in good condition. Furthermore, a phosphatase test showed that the sample had not been heat treated. Although unpleasant to find the specimen is not harmful to humans. The surface deposits seen adhered to the complaint sample were consistent with contact with the reported product.

PLATE 1 Shows the complaint sample photographed as received, photographed from both sides (top and bottom), against a millimetre-squared background. Note the slightly deflated appearance to one end of the insect (circled)

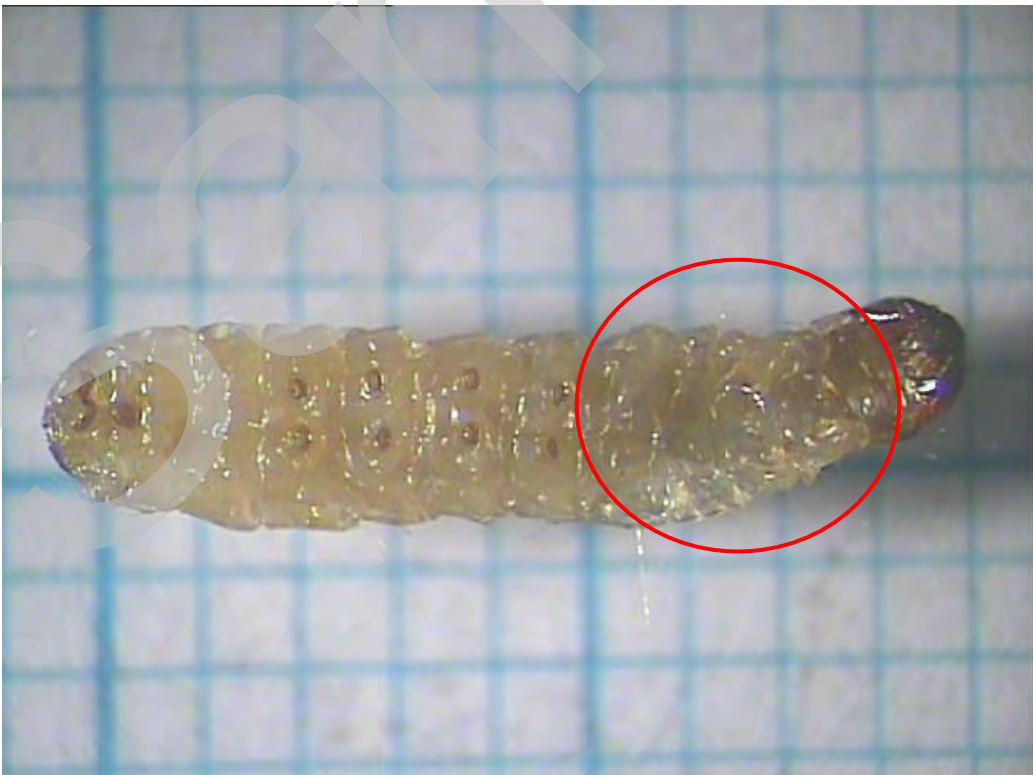


PLATE 2 Shows an example of the gelatinised wheat starch granules seen within the surface deposit adhered to the complaint sample. Magnification x220

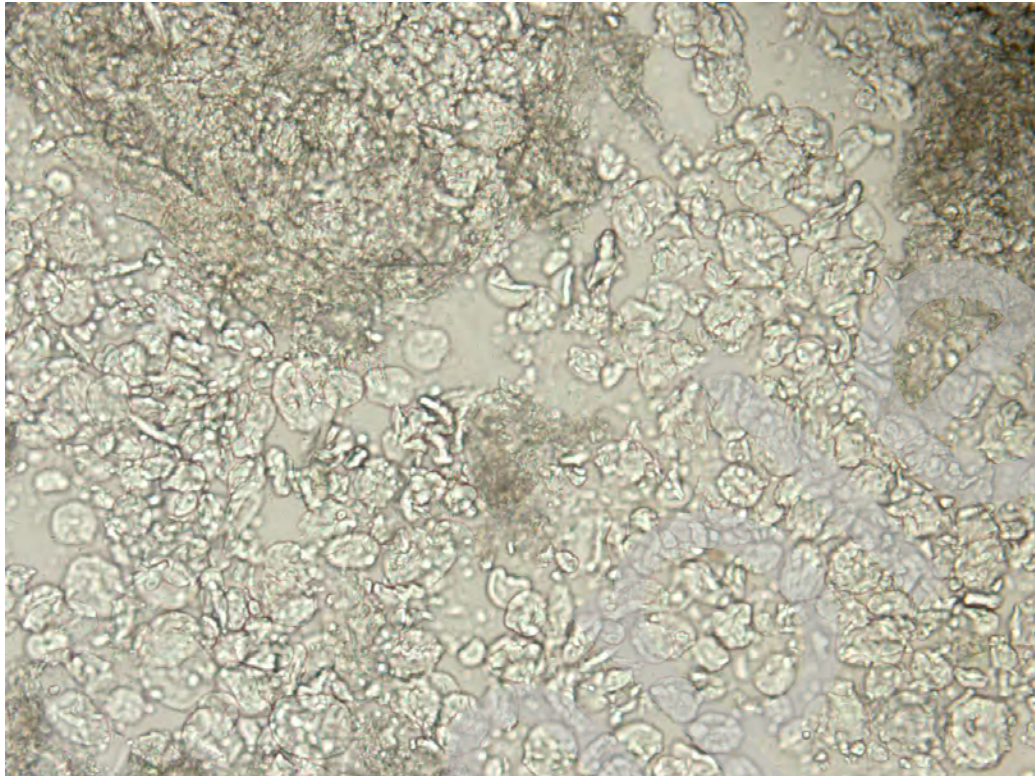


PLATE 3 Shows an example of cells consistent with the skin of a tomato seen within the surface deposit adhered to the complaint sample. Magnification x220

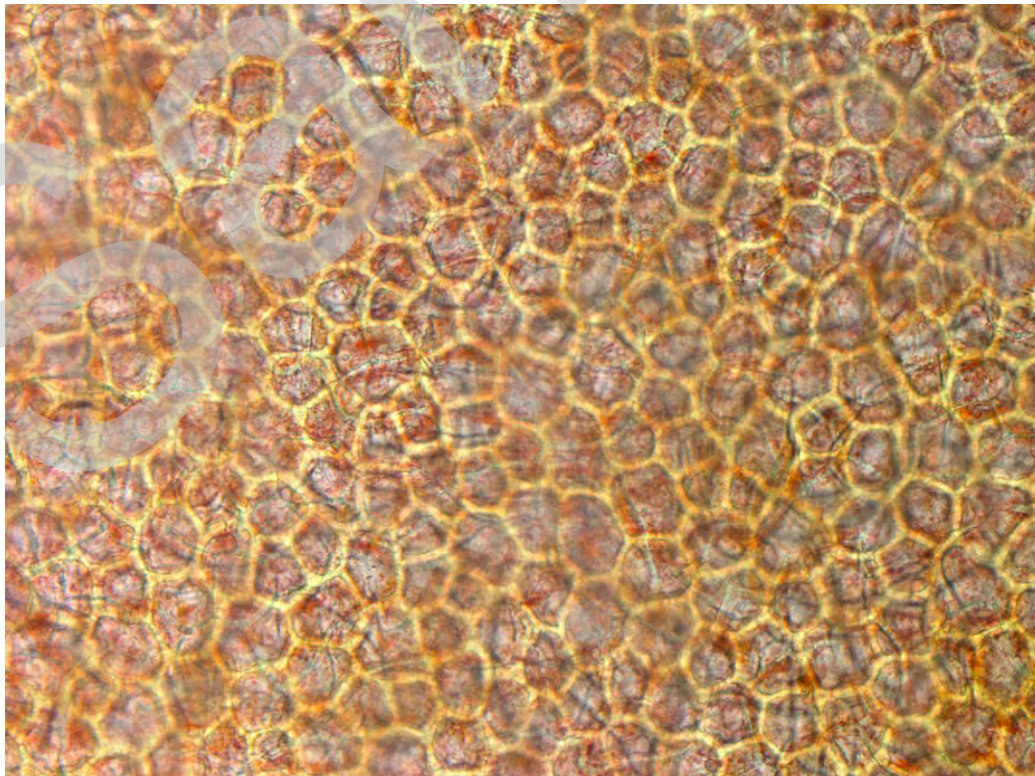


PLATE 4 Shows an example of the globular structures (arrowed) seen within the surface deposit adhered to the complaint sample. Magnification x220

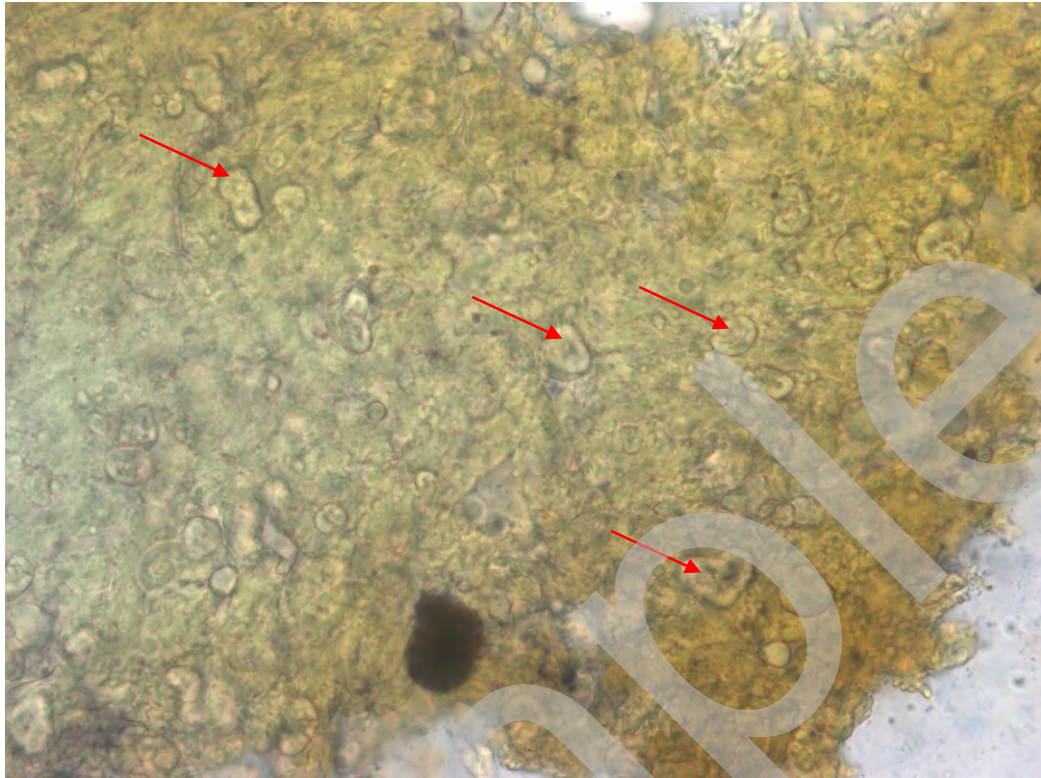


PLATE 5 Shows the results of the phosphatase test (before, top and after, bottom). A colour change from clear to yellow was seen in the positive controls, no colour change was noted in the negative control, and a colour change was noted in the complaint sample

