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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB 4789.16-2016

Replacing GB/T 4789.16-2003

Microbiological examination of food hygiene -- Identification of common mycotoxin-producing fungi

食品安全国家标准 食品微生物学检验 常见产毒霉菌的形态学鉴定

(English Translation)

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Foreword

This standard replaces GB/T 4789.16-2003 "Microbiological examination of food hygiene common mycotoxin producing identification" this standard compared with GB/T 4789.16-2003, main changes are as follows.

--- Standard name was changed to "national food safety standards of food microbiology testing common mycotoxin producing morphological identification";

--- Increased inspection procedures;

--- Increased toxigenic species of Aspergillus niger, Aspergillus black, stick Aspergillus, Monascus, etc;

--- Modify the standard name;

--- Modify the equipment and materials;

--- Modify the media and reagents;

--- Modify the morphological description of each species;

--- Revised Appendix A;

--- Remove the yellow green green mold, Penicillium Island, wrinkles Penicillium, Penicillium produce purple, red and other Penicillium species;

--- Delete keys original Appendix B, Appendix C, Appendix D.

National Food Safety Standard Food Microbiology Inspection Morphological Identification of

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common mycotoxin

1 Scope

This standard specifies the method of identifying common toxigenic fungi in food.

This standard applies to Aspergillus (Aspergillus), Penicillium (Penicillium), Fusarium (Fusarium) and other species often See the identification of toxigenic fungi.

2 Equipment and Materials

In addition to the microbiological laboratory conventional sterilization and cultivation equipment, other equipment and materials as follows.

2.1
Refrigerator. 2 °C ~ 5 °C.

2.2
incubator. 25 °C ± 1 °C.

Microscope 2.3. 10 to 100 times.

2.4
ocular micrometer.

2.5
lens micrometer.

2.6
biological safety cabinet.

2.7
thermostatic water bath.

2.8
inoculation hook.

2.9
Separation needle.

2.10
slide.

2.11
coverslip.

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2.12
stainless steel knife or ophthalmic surgical knife.

3 Reagents and culture medium

3.1
lactic acid phenol solution. see A.1.

3.2
Czapek medium. see A.2.

3.3
potato - dextrose agar medium. see A.3.

3.4
malt extract agar medium. see A.4.

3.5
sugarless potato agar medium. see A.5.

4 Steps

4.1
colony characteristics observed. In order to develop a complete record of the colony for observation may be pure cultures o'clock on the plate. Aspergillus, Penicillium usually Czapek medium was inoculated with Fusarium inoculation usually takes a variety of media, other fungi commonly used potato - dextrose agar medium.

The plates were inverted, up inoculation point or three points, each strain was inoculated two plates, is placed in 25 °C ± 1 °C incubator conducted training support. When small colonies just grow, remove a plate aseptically with sterile ophthalmic surgical knife stainless steel knife or colonies, along with culture Quiche under 1cm x 2cm pieces, the home side colony, cultured, observed at 5d ~ 14d. This culture method instead of a small, significant Fruiting bodies borne police state.

4.2
ramp observation. The fungal pure cultures streaked (Aspergillus, Penicillium) or point species (Fusarium or bacteria) to the plane, train 5d ~ 14d, Observe colony morphology, but also can directly observe the shape and arrangement of the spores under low magnification microscope tube set slant.

4.3
Producer. Take a glass slide add a drop of lactic acid phenol solution, take a small hook

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inoculation fungal cultures, set lactic acid - phenol solution, with two separate Needle culture was gently torn to pieces, should not apply, so as not to destroy the structure of the fungus. Then add coverslip, if bubbles can be heated in the alcohol lamp exclude. Production should be in a biological safety cabinet or a sterile hood vaccination or inoculation box or glove box operation to prevent spores flying.

4.4

Microscopy. morphology was observed fungal hyphae and spores, features, spores, etc. are arranged, and recorded.

5 Test procedure

Common mycotoxin producing morphological identification test program shown in Figure 1.

1 common mycotoxin producing morphological identification of inspection procedure

6.1 Aspergillus (Aspergillus)

Toxigenic fungi of the genus include Aspergillus flavus, Aspergillus parasiticus, Aspergillus versicolor, Aspergillus nidulans, Aspergillus ochraceus, Aspergillus niger, Aspergillus and black curved rod Mold and so on. These fungi may produce secondary metabolites of Aspergillus flavus toxin, ochratoxin, fumonisin, patulin and so on.

Aspergillus mycelium colorless, transparent or in bright colors, but not dirt color was dark; fertile conidia stalks in a generally perpendicular direction from Specialized foot thick-walled cells give birth, smooth or rough, usually without diaphragm; forming a top top inflated balloon, with different shapes, formed from the surface of the bottle Stems, or to produce stem base, and then forming a bottle stems from the stem base, and finally produce spores stems from the bottle. Conidia unicellular, with a variety of different shapes and Color, smooth or ornamented, connected unbranched chains. From the top of the capsule to conidia chains of different shapes conidia head, revealing different Colour. Some species can form a thick shell cell shape varies by species; some species can be formed sclerotia or sclerotia class structure; there are species produce Sexual stage, to form a closed capsule shell containing asci and ascospores, mostly transparent or with different colors, shapes and ornamentation.

6.1.1 Flavus (A.flavus)

Colonies grew rapidly in Czapek agar, 25 °C 7d diameter 35mm ~ 40mm (~ 70mm), 12d ~ 14d of 55mm ~ 70mm; velvet-like texture is mainly dense, sometimes a little now or a central portion of fluff were flocculent, or are flat to irregular radial grooves; points Endospores more structure, the color is yellow-green to green grass, early lighter, slightly darker, mostly in shallow water near the green after Qin old (LightCressGreen -> CressGreen, R.XXXI), there was a green Osmanthus (MignonetteGreen, R.XXXI), dark

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