

# Macroanalytical Procedures Manual (MPM)

## V-8. Spices, Condiments, Flavors, and Crude Drugs

### G. Supplemental Method for Whole Cinnamon/Cassia Bark

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## **G. Supplemental Method for Whole Cinnamon/Cassia Bark, *Cinnamomum* sp. Schäffer.**

### **(1) Scope**

Cinnamon is a collective term used for several species of plants: *Cinnamomum burmannii* (Nees & T. Nees) Blume, *C. sessilifolium* Kanehira, *C. verum* J. Presl and *C. cassia* (L.) J. Presl (Katzner, 1999). This method supplements [Section 8.A](#), by describing procedures specific for whole Cinnamon/Cassia, *Cinnamomum* sp. Schäffer bark (cinnamon quills).

Note: For products specifically labeled as broken cinnamon, cinnamon quills and pieces, or similar type wording; examine product using AOAC Official Method 969.43 Light Filth in Cinnamon (Unground) (Crude and Reconditioned): Sieving Method.

### **(2) Applicable Documents**

- [CPG Sec. 525.225 - Whole Cassia or Whole Cinnamon, Ground Cinnamon - Adulteration by Insect and Rodent Filth; Mold; Mammalian Excreta](#)

### **(3) Defects**

Cinnamon/cassia bark can come under attack by field or storage arthropod pests (Figure V-8-G-1(A)) and various molds (Figures V-8-G-2 and 3) and occasionally hard and sharp objects can be mixed in with the cinnamon (Figure V-8-G-a(B)). See [Section 8.A\(3\)](#) for other defects.

### **(4) Procedure: Determination of Contamination in Whole Cinnamon/Cassia Bark Caused by Arthropods, Animal Excreta, and Extraneous Material**

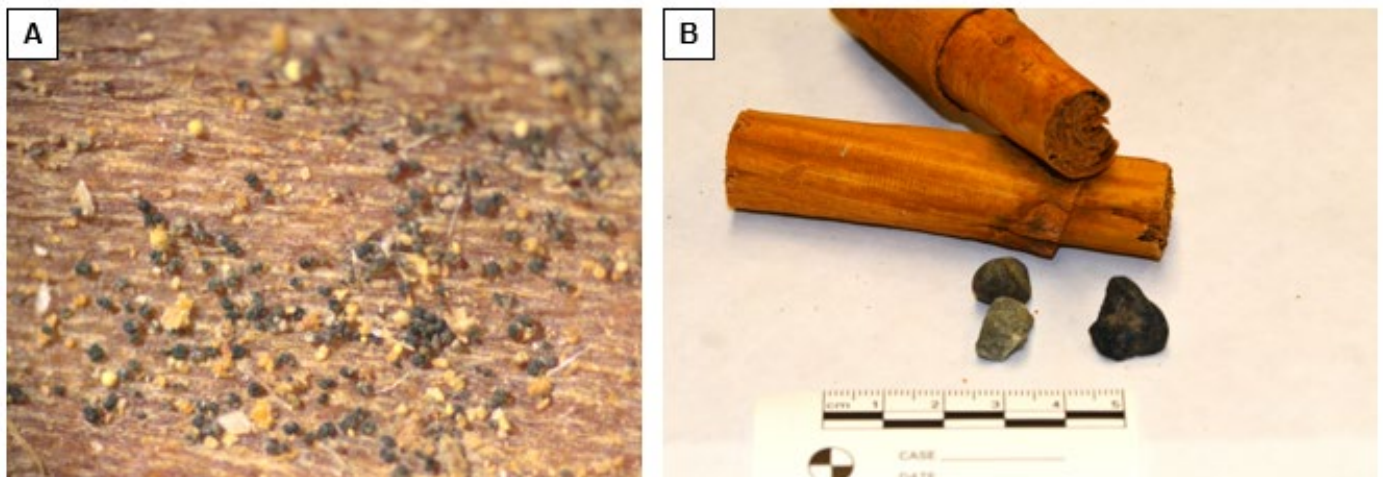
Sample size should consist of six 454 g subsamples. Examine entire contents of subsamples in small amounts with good light and against white paper or other suitable contrasting background. Visual examination, classification, and reporting: see [Section V-8.A\(4\)b-d](#).

## (5) Procedure: Determination of Arthropod Damaged, Moldy, and Otherwise Rejects in Whole Cinnamon/Cassia Bark

**a. Sample Preparation** – Examine six subsamples by weighing out representative analytical units of at least 100 g each taken from Section 8.G(4). Use the sieved material remaining after completing procedure in Section 8.G(4).

**b. Visual Examination** – Cinnamon/cassia sticks may need to be broken open with a hammer, pliers or similar device to view the interior portion. The interior portion can contain mold and arthropods. Examine the pieces for mold or arthropod defiled/infested pieces and other objectionable defects (Figure V-8-G-1(B)). The entire cinnamon/cassia stick is considered in the calculation where evidence of contamination is found. For a rejected stick, weigh all the associated broken pieces together. Examine each cinnamon/cassia stick in the analytical unit for reject material visible to the naked eye up to 10x assisted magnification. If the magnification exceeds 10x for the initial examination, this should be stated in the report of the results. Higher magnification may be used for confirmation of findings after the initial examination. Classify and report each category according to [Section 8.A\(5\)c & d](#).

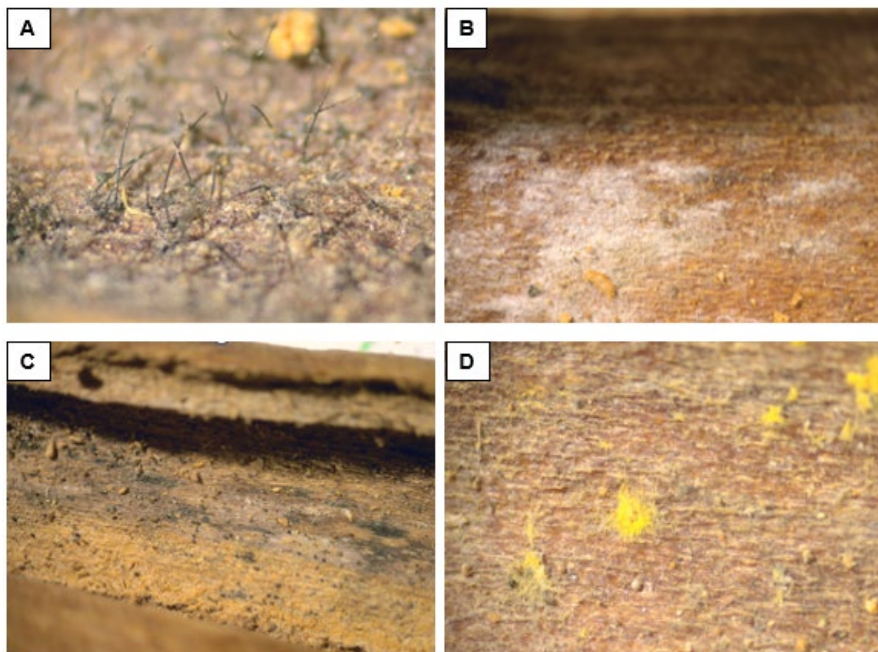
## Figures



**Figure V-8-G-1. A.** Insect excreta pellets found on cinnamon bark, *Cinnamomum* sp. Schäffer (20x). **B.** An example of a hard and sharp object — rocks found in cinnamon bark. (Source: Photos courtesy of H. Loechelt-Yoshioka, FDA.)



**Figure V-8-G-2.** External mold on cinnamon bark, *Cinnamomum* sp. Schäffer. indicated by arrows. (Source: Photos courtesy of H. Loechelt-Yoshioka, FDA.)



**Figure V-8-G-3. A-D.** Different types of molds found on the inside of cinnamon bark, *Cinnamomum* sp. Schäffer (20x). (Source: Photos courtesy of H. Loechelt-Yoshioka, FDA.)

## Acknowledgements

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## References

Katzer, G. (1999). Gernot Katzer's Spice Pages: Ceylon Cinnamon (*Cinnamomum zeylanicum* Blume). [http://gernot-katzers-spice-pages.com/engl/Cinn\\_zey.html](http://gernot-katzers-spice-pages.com/engl/Cinn_zey.html).

## Additional Information

Informational articles not cited in the above section, but still useful:

American Spice Trade Association (2016), *Spice List*.

American Spice Trade Association (2014). *ASTA Cleanliness Specifications for Spices, Seeds, and Herbs (Foreign and Domestically Produced)*.

Feltes, G., Ballen, S. C., Steffens, J., Paroul, N., Steffens, C. (2023). Differentiating True and False Cinnamon: Exploring Multiple Approaches for Discrimination. *Micromachines*; 14, 1819. <https://doi.org/10.3390/mi14101819>.

Parry, J. W., (1962) *Spices - Their Morphology, Histology, and Chemistry*, Chemical Publishing Co., Inc., New York, NY, 226 pp.

Wang, Y. H., Avula, B., Nanayakkara, N. P. D., Zhao, J., Khan, I. A., (2013). Cassia Cinnamon as a Source of Coumarin in Cinnamon-Flavored Food and Food Supplements in the United States. *Journal of Agricultural and Food Chemistry*, 61:4470-4476.

## Revision History

| Version No. | Purpose of change | Date |
|-------------|-------------------|------|
| V0          | New process       | 2026 |