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Microbiology of the food chain — Detection and enumeration of *Cryptosporidium* and *Giardia* in fresh leafy green vegetables and berry fruits

Microbiologie de la chaîne alimentaire — Recherche et dénombrement de Cryptosporidium *et* Giardia *dans les légumes verts frais à feuilles et les fruits à baies*

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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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Foreword

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The committee responsible for this document is ISO/TC 34, *Food products*, Subcommittee SC 9, *Microbiology*.

Introduction

Cryptosporidium spp. and *Giardia duodenalis* (syn. *G. lamblia*, *G. intestinalis*) are protozoan parasites that can cause enteric illness in humans. Both organisms are characterized by a robust transmission stage, the *Cryptosporidium* oocyst and the *Giardia* cyst, which can survive in moist environments for prolonged periods. These transmission stages are hereafter referred to collectively as (oo)cysts. *Cryptosporidium* oocysts in particular are highly resistant to chlorine at the concentrations used in the treatment of drinking water, and chemical disinfection of leafy green vegetables and berry fruits, where performed during processing, may also be ineffective. Consequently, the absence of vegetative bacteria on fresh produce as indicators of faecal contamination does not necessarily indicate the absence of (oo)cysts. No practical method exists to culture *Cryptosporidium* spp. and *Giardia duodenalis* for the purpose of detection, and therefore, in order to detect contamination with these parasites, direct removal of the (oo)cysts from the food sample must be performed, followed by visualization of the (oo)cysts by microscopy. The methods described in this International Standard are for determining whether *Cryptosporidium* and/or *Giardia* (oo)cysts are present on the surfaces of fresh produce and for their enumeration. This International Standard is based on published methods that have been tested in a multicentre collaborative trial. Alternative methods can be used following a demonstration of their equivalence with this International Standard following the protocol described in ISO 16140.[1]