NSF International

Joint Committee Correspondence

TO: Joint Committee on Dietary Supplements

FROM: Brian Zamora, Chairperson

DATE: May 23, 2019

SUBJECT: Proposed revision to NSF/ANSI 173 – *Dietary Supplements* (173i81r3)

Revision 3 for NSF/ANSI 173, Issue 81 is presented to the Joint Committee on Dietary Supplements for consideration. Please review the changes proposed to this standard and submit your ballot by **the due date of June 13, 2019** via the NSF Online Workspace <www.standards.nsf.org>.

When adding comments, please include the section number applicable your comment and add all comments under one comment number whenever possible. If additional space is needed, you may upload a word or .PDF version of your comments online via the browser function.

Purpose

The intent of this proposal is to expand the content of NSF 173 with respect to its references to known toxic constituents and known adulterants and to add recognition of certain botanical species that are prohibited from use in dietary supplements.

Background

This was originally balloted in July of 2018 but received negative comments. These have been resolved and approved of by the negative commenter per revision 2. Revision 2 was balloted in March 2019 but received one negative comment. Revision 3 resolves this comment and was approved of by the commenter.

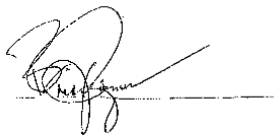
It is proposed that section 5.3.4 Aristolochic acid be expanded to recognize pyrrolizidine alkaloids and ephedrine alkaloids as other botanical constituents that are of concern for dietary supplements. These additions will be made in separate issue papers. This paper will focus on updates to Aristolochic acid.

All of the genera should be italicized. FDA's Import Alert in this matter never mentioned either *Asiphonia* and *Hexastylis* was mentioned only insofar as *H. arifolia* may be a synonym for a species of *Asarum*; in addition, these species are either never or very nearly never in commerce – so they could be removed if we prefer to be most accurate, though if retained there is no actual burden since these are not in commerce; Annex A in this document contains several species which "require testing for AA" that were included on FDA's original list but have now been removed from this list by FDA. To conform to FDA's current guidance only species in the following genera should be retained on this list: *Aristolochia*; *Asarum*; *Cocculus*; and *Thottea*

Public Health Impact

These changes will have no negative impact on public health.

If you have any questions feel free to contact me.



Brian Zamora
Chairperson, Joint Committee on Dietary Supplements
c/o Joint Committee Secretariat
Rachel Brooker, Standards Development Liaison
NSF International
Phone: (734) 827-6866
Email: rbrooker@nsf.org

NSF International Standard
for Dietary Supplements —

Dietary supplements

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5 Product requirements

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5.3.4 ~~Aristolochic acid~~ Botanical constituents

5.3.4.1 Aristolochic acid

Dietary ingredients and finished products shall not contain botanicals in the Aristolochiaceae family ~~(e.g., species in the following genera: *Aristolochia*; *Asarum*; Asiphonia; Hexastylis; *Thottea*; etc.)~~ unless such materials or products are confirmed to be free of aristolochic acid at a limit of detection of 0.5 ppm.

Dietary ingredients and finished products containing any botanicals listed in Annex A shall be confirmed to be free of aristolochic acid at the above-stated limit of detection according to 7.4.

~~5.3.5~~ 5.3.4.2 Pyrrolizidine alkaloids (PAs)

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Annex A
(normative)

Table A1 - List of botanicals which require testing for aristolochic acid[1]

~~‡*Aristolochia* spp.~~	~~‡*Asarum forbesii*~~
~~‡*Aristolochia acuminata*~~	~~‡*Asarum heterotropoides*~~
~~‡*Aristolochia argentina*~~	~~‡*Asarum sieboldii*~~
~~‡*Aristolochia baetica*~~	~~*Akebia* spp.~~
~~‡*Aristolochia bracteata*~~	~~**Akebia quinata*~~

~~[1] The source of this table is *FDA Alert: Aristolochic Acid: Listing of Botanical Ingredients of Concern* <http://www.fda.gov/Food/DietarySupplements/Alerts/ucm095283.htm>. The lists provided by FDA have been revised where needed for taxonomic accuracy. One additional species, *Clematis terniflora* var. *mandshurica*, is included here as it, along with *C. chinensis* and *C. hexapetala*, is an acceptable source of Radix et Rhizoma Clematidis (Chinese Pharmacopoeia Commission. *Pharmacopoeia of the People's Republic of China*, Volume I. Beijing: People's Medical Publishing House. 2005. Listed as *C. manshurica*).~~

~~†*Aristolochia chilensis*~~	~~**Akebia trifoliata*~~
~~†*Aristolochia cinnabarina*~~	~~†*Thottea siliquosa* (syn. *Bragantia wallichii*)~~
~~†*Aristolochia clematitis*~~	~~*Clematis* spp.~~
~~†*Aristolochia contorta*~~	~~**Clematis armandii*~~
~~†*Aristolochia cymbifera*~~	~~**Clematis chinensis*~~
~~†*Aristolochia debilis*~~	~~**Clematis hexapetala*~~
~~†*Aristolochia elegans*~~	~~**Clematis terniflora* var. *mandshurica*~~
~~†*Aristolochia esperanzae*~~	~~**Clematis montana*~~
~~†*Aristolochia fangchi*~~	~~*Clematis uncinata*~~
~~†*Aristolochia fimbriata*~~	~~*Cocculus* spp.~~
~~†*Aristolochia indica*~~	~~*Cocculus carolinus*~~
~~†*Aristolochia kaempferi*~~	~~*Cocculus hirsutus*~~
~~†*Aristolochia kwangsiensis*~~	~~*Cocculus indicus*~~
~~†*Aristolochia macrophylla*~~	~~*Cocculus laurifolius*~~
~~†*Aristolochia manshuriensis*~~	~~*Cocculus leaeba*~~
~~†*Aristolochia maurorum*~~	~~*Cocculus madagascariensis*~~
~~†*Aristolochia maxima*~~	~~**Cocculus orbiculatus* (syn. *C. trilobus*)~~
~~†*Aristolochia mollissima*~~	~~*Cocculus palmatus*~~
~~†*Aristolochia pistolochia*~~	~~*Cocculus pendulus*~~
~~†*Aristolochia rigida*~~	~~*Cocculus thunbergii*~~
~~†*Aristolochia rotunda*~~	~~*Diploclisia affinis* (syn. *D. chinensis*)~~
~~†*Aristolochia serpentaria*~~	~~*Menispermum dauricum*~~
~~†*Aristolochia watsonii*~~	~~**Saussurea costus* (syn. *S.lappa*)~~
~~†*Aristolochia westlandii*~~	~~*Sinomenium acutum* (syn. *Cocculus diversifolius*)~~
~~†*Aristolochia zollingeriana*~~	
~~†*Asarum canadense*~~	~~*Stephania* spp.~~
~~†*Asarum himalaicum*~~	~~**Stephania tetrandra*~~
~~†*Asarum splendens*~~	~~**Vladimiria souliei*~~

~~NOTE – The potential for aristolochic acid contamination in an herb listed in this table is highly variable. Those marked with a dagger symbol (†) are species in the Aristolochiaceae family and should be assumed to contain aristolochic acid unless scientifically valid analysis shows otherwise. Authoritative references (e.g., Upton R., *Characterization of selected plants that may contain or be adulterated with aristolochic acid.* Scotts Valley: American Herbal Pharmacopoeia, 2006) have confirmed that those marked with an asterisk(*) have some history of substitution with one or another species of *Aristolochia*. The other listed taxa included here because they have been identified by FDA as "botanicals which may be adulterated with aristolochic acid," but may not be likely to contain this contaminant. The specific contamination and adulteration risk factors that apply in a certain situation should be considered in the development of specifications according to good manufacturing practices.~~

†*Aristolochia* spp. (all species)	†*Asarum* spp. (all species)
**Cocculus orbiculatus*	†*Thottea siliquosa*

NOTE – The species marked with a dagger symbol (†) are species in the Aristolochiaceae family and should be assumed to contain aristolochic acid (FDA Import Alert 54-10) unless scientifically valid analysis shows otherwise. The species marked with an asterisk(*) has some history of substitution with one or another species of *Aristolochia* (Upton R., *Characterization of selected plants that may contain or be adulterated with aristolochic acid.* Scotts Valley: American Herbal Pharmacopoeia, 2006).

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