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March 4, 2003

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Dear Dr. Taylor:

We are writing to inform you about the large number of products containing aristolochic acid (AA) that are currently for sale on the World Wide Web, despite the earlier FDA warnings in 2000 and 2001 (http://www.cfsan.fda.gov/~dms/ds-bot.html), and the voluntary recalls of some products following the FDA warnings. We have been conducting research on the possible cancer hazards of herbal products, and in the course of our work we have identified 112 AA products, which we discuss below. We hope that this information will be useful to the FDA in its efforts to protect the American public from the health effects of AA. Products containing AA present an unreasonable risk of harm to the American consumer. Our results indicating the inadequacy of postmarket surveillance and the difficulty of controlling sales on the Internet support the idea that products containing AA should be banned. Herbal medications containing Aristolochia species have been banned in Germany, Japan, Malaysia, New Zealand and the UK. In Australia products known to contain AA were canceled, and all manufacturers are required to ensure that herbs which are likely to be used interchangeably with Aristolochia are free from AA.

The urgency of the problem of AA is that in Belgium a slimming medication containing AA was found to very rapidly induce nephropathy, kidney failure and urothelial tumors in women, and the response was dose related (Nortier *et al.*, 2000). Subsequently, AA nephropathy has been reported in nine countries (Belgium, China, France, Germany, Japan, Spain, Taiwan, UK, and USA). Urinary tract cancer due to AA has now been found in the UK (Lord *et al.*, 2001; Lord *et al.*, 1999) and Taiwan (Chang *et al.*, 2001; Yang *et al.*, 2000) as well as Belgium (Cosyns *et al.*, 1994; Nortier *et al.*, 2000; Vanherweghem *et al.*, 1995). Our findings of these 112 products are particularly alarming because they occurred after FDA action. Additionally, unlike the Belgian pills, which contained *Aristolochia* by substitution, 19 products on the Web intend to include botanical species that contain AA (*Aristolochia* spp. and *Asarum canadense*) and list them on the bottle (see Table 1).

Whereas Americans today are easily able to purchase products containing AA, which is a known human carcinogen, more than 20 years ago the German Federal Health Office prohibited the sale of 240 products containing AA due to its potent carcinogenic effects in rats (Bundesgesundheitsamt, 1982).

Available Products Containing Aristolochic Acid

The FDA advised industry in 2001 not to manufacture products that contain AA (http://www.cfsan.fda.gov/~dms/ds-botl4.html), and the FDA restricted the importation of products that potentially contain AA (http://www.fda.gov/ora/fiars/ora_import_ia5410.html). The

results of our recent work are presented in Tables 1-3. Each table reports the botanical species, the name of the medicinal preparation, the retailer, the manufacturer, and the Web page link for the product containing AA. The vast majority of these products have a US Web address. The results indicate that consumers are not currently protected from taking herbal products known or suspected to contain AA, in spite of earlier FDA action. Moreover, AA has recently been evaluated by the World Health Organization as a human carcinogen (International Agency for Research on Cancer, 2002).

Table 1 reports products with botanical species that are known to contain AA. Nine medicinal preparations contain *Aristolochia* species, and 10 contain *Asarum canadense*. We found 43 different Web pages that are currently selling such products, and we have attached Web pages for each of these 19 products.

Table 2 reports 80 products with botanical species that FDA listed in 2001 as possibly substituted by *Aristolochia* species. Our work has identified many more such products than FDA identified in 2001. They include products with *Akebia* spp. (21), *Asarum* species other than *Asarum canadense* (14), *Clematis* spp. (14), *Cocculus* spp. (3), *Saussurea lappa* (11), *Sinomenium acutum* (1), and *Stephania* spp. (16). These products are widely available, at 108 Web pages. In Japan, where herbal medicines with *Aristolochia* are not permitted, 10 Kampo formulas were recently identified for which the herbal medicine listed *Akebia* or *Sinomenium* as ingredients but which had been substituted by *Aristolochia* species (Seto *et al.*, 2002).

In addition to the species that were of concern to FDA in 2001, we found some products that do not specify a Latin name for the botanical species, but which are likely to be an *Asarum* because the name on the product is "wild ginger." The 14 such products and 18 Web pages are reported in Table 3.

One of the products that FDA identified in 2001 was "Aller Relief", which the FDA reported was voluntarily recalled by its manufacturer, BMK International (Neo Concept), on January 19, 2001 (http://www.fda.gov/oc/po/firmrecalls/BMK1_01.html). FDA reported that the manufacturer indicated it would reformulate Aller Relief to remove the *Asarum canadense*, which contains AA. We have communicated with BMK International, which has indicated to us that there is no *Asarum canadense* in the current formulation of Aller Relief, and their Web page does not list *Asarum canadense* among the ingredients. One retailer's Web page, Spanda (enclosed), however, still lists *Asarum canadense* as an ingredient (http://spanda.com/neoprods/neoa.html). Based on this information, either Spanda is incorrectly stating the ingredients of Aller Relief or they are selling old stocks of Aller Relief which contain *Asarum canadense*.

The Cancer Hazard of Aristolochic Acid

The carcinogenic hazard of AA has been known for 20 years from the results of animal experiments. Mengs (1982) reported induction of forestomach, kidney and bladder tumors in rats, occurring unusually rapidly (13-26 weeks to the time of the first tumor). AA is one of the most potent carcinogens in our large database of the results of animal cancer tests, the Carcinogenic Potency Database (http://potency.berkeley.edu and Gold *et al.*, (1997)). The dose to induce tumors in rats is more potent (lower) than 98% of the carcinogens in our database. Using the rodent carcinogenic potency of AA and the estimated human AA dose in the Belgian diet clinic, AA would be among the most hazardous human exposures we have studied. The dose administered in the Belgian diet clinic was nearly equal to the dose to induce tumors in rats. AA is also a potent carcinogen in mice (Mengs, 1988) and rabbits (Cosyns *et al.*, 2001), is mutagenic (Robisch *et al.*, 1982), and forms DNA adducts in humans (Bieler *et al.*, 1997; Schmeiser *et al.*, 1996). In rabbits AA induces acute nephrotoxicity, the same DNA adducts in the kidney as in humans, and induces urothelial tumors (Cosyns *et al.*, 2001).

There has been a question about whether AA alone was responsible for the diseases in the Belgian clinic because other compounds were administered simultaneously to the patients, and because the rats in the 1982 cancer test did not develop chronic nephrotoxicity. Experimental results in another animal model, the rabbit, indicate that when AA is given as a single compound, all animals developed interstitial fibrosis in the kidney and some developed urinary tract tumors (Cosyns *et al.*, 2001). Additionally, a more recent study in rats indicates that AA induces chronic renal failure with interstitial fibrosis in salt-depleted rats (Debelle *et al.*, 2002). These results to-

gether with the formation of DNA adducts in both humans and experimental animals, support the hypothesis that AA alone was responsible for kidney failure and cancer in the Belgian diet clinic.

Conclusion

We have identified 112 botanical products that may contain AA, which are readily available to consumers on the World Wide Web. This represents an unreasonable risk of harm given the findings that AA causes nephropathy, kidney failure and urinary tract cancer in humans. Products that contain AA should not be available for consumption by Americans.

The case of AA indicates the lack of adequate safety concerns, pre-market testing and scientific scrutiny for herbal medications as defined in the Dietary Supplement Health and Education Act of 1994 (DSHEA). Regulatory scrutiny for herbal products is weaker than that for food additives, cosmetics or over-the-counter drugs. Unlike food additives or cosmetics, however, herbal medications are recommended at high, pharmacologically active doses that can pose great risk of harm. Moreover, since consumers self-medicate, their intake may exceed that of recommended doses. Since it is not known which consumers are using which herbal products, it is particularly difficult to identify health hazards. In the case of AA, a known clinical population was exposed, and the symptoms were rapid and unusual, thus allowing identification of the health effects. More generally for herbal products, it would be extraordinarily difficult to identify carcinogenic effects in consumers because it is not known who is taking what supplement and for how long, because of the long lag time between exposure and tumor induction for most carcinogens, and because the carcinogenic effect may occur infrequently in a population. AA is readily available on the Web even after FDA warned of its health effects. AA is a known human carcinogen that also produces acute effects in the kidney; therefore it may be an imminent hazard to health and should be immediately withdrawn from the marketplace.

We hope that this issue will receive your earliest attention and would appreciate a response.

Sincerely,

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Enclosures: 3 tables; 19 Web pages of products

cc: Dr. Robert Moore

Ms. Virginia Wilkening

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Dr. Stephen Straus Dr. Marc Blackman Dr. Christopher Portier

References

- Bieler, C. A., Stiborova, M., Wiessler, M., Cosyns, J. P., van Ypersele de Strihou, C., and Schmeiser, H. H. (1997). ³²P-post-labelling analysis of DNA adducts formed by aristolochic acid in tissues from patients with Chinese herbs nephropathy. *Carcinogenesis* **18**, 1063-1067.
- Bundesgesundheitsamt (1982). Dtsch. Apoth. Ztg. 122, 2287.
- Chang, C. H., Wang, Y. M., Yang, A. H., and Chiang, S. S. (2001). Rapidly progressive interstitial fibrosis associated with Chinese herbal medications. *Am. J. Nephrol.* **21**, 441-448.
- Cosyns, J.-P., Dehoux, J.-P., Guiot, Y., Goebbels, R.-M., Robert, A., Bernard, A. M., and van Ypersele de Strihou, C. (2001). Chronic aristolochic acid toxicity in rabbits: A model of Chinese herbs nephropathy? *Kidney Int.* **59**, 2164-2173.
- Cosyns, J.-P., M., J., Squifflet, J.-P., Van Cangh, P.-J., and van Ypersele de Strihou, C. (1994). Urothelial malignancy in nephropathy due to Chinese herbs. *Lancet* **344**, 188.
- Debelle, F. D., Nortier, J. L., De Prez, E. G., Garbar, C. H., Vienne, A. R., Salmon, I. J., Deschodt-Lanckman, M. M., and Vanherweghem, J.-L. (2002). Aristolochic acids induce chronic renal failure with interstitial fibrosis in salt-depleted rats. *J. Am. Soc. Nephrol.* **13**, 431-436.
- Gold, L. S., Slone, T. H., Ames, B. N., Manley, N. B., Garfinkel, G. B., and Rohrbach, L. (1997). Carcinogenic Potency Database. In Handbook of Carcinogenic Potency and Genotoxicity Databases (L. S. Gold and E. Zeiger, eds.), pp. 1-605. CRC Press, Boca Raton, FL.
- International Agency for Research on Cancer (2002). Some Traditional Herbal Medicines, Some Mycotoxins, Naphthalene and Styrene. IARC, Lyon, France.
- Lord, G. M., Cook, T., Arlt, V. M., Schmeiser, H. H., Williams, G., and Pusey, C. D. (2001). Urothelial malignancy and Chinese herbal nephropathy. *Lancet* **358**, 1515-1516.
- Lord, G. M., Tagore, R., Cook, T., Gower, P., and Pusey, C. D. (1999). Nephropathy caused by Chinese herbs in the UK. *Lancet* **354**, 481-482.
- Mengs, U. (1982). The carcinogenic action of aristolochic acid in rats. Arch. Toxicol. 51, 107-119.
- Mengs, U. (1988). Tumour induction in mice following exposure to aristolochic acid. Arch. Toxicol. 61, 504-505.
- Nortier, J. L., Muniz Martinez, M.-C., Schmeiser, H. H., Arlt, V. M., Bieler, C. A., Petein, M., Depierreux, M. F., De Pauw, L., Abramowicz, D., Vereerstraeten, P., and Vanherweghem, J.-L. (2000). Urothelial carcinoma associated with the use of a Chinese herb (*Aristolochia fangchi*). *N. Engl. J. Med.* **342**, 1686-1692.
- Robisch, G., Schimmer, O., and Gogglemann, W. (1982). Aristolochic acid is a direct mutagen in *Salmonella typhimurium*. *Mutat. Res.* **105**, 201-204.
- Schmeiser, H. H., Bieler, C. A., Wiessler, M., van Ypersele de Strihou, C., and Cosyns, J.-P. (1996). Detection of DNA adducts formed by aristolochic acid in renal tissue from patients with Chinese herbs nephropathy. *Cancer Res.* **56**, 2025-2028.
- Seto, T., Hamano, T., Shioda, H., and Kamimura, H. (2002). Analysis of aristolochic acid I and II in Kampo medicine preparations. *J. Health Sci.* **48**, 412-417.
- Vanherweghem, J.-L., Tielemans, C., Simon, J., and Depierreux, M. (1995). Chinese herbs nephropathy and renal pelvic carcinoma. *Nephrol. Dial. Transplant.* **10**, 270-273.
- Yang, C.-S., Lin, C.-H., Chang, S.-H., and Hsu, H.-C. (2000). Rapidly progressive interstitial nephritis associated with Chinese herbal drugs. *Am. Kidney Dis.* **35**, 313-318.

Table 1. Botanical Products, Available as of March 4, 2003 on the Web, that List Ingredients Known to Contain Aristolochic Acid

Species	Medicinal Name	Retailer	Manufacturer	Web page with AA Product
Aristolochia clematis	PMS-Ease	InnerLife Wellness Center	Växa	http://www.innerlifewellness.com/products/pms.html
Aristolochia fangji	Tong Xue Pian Tablets	MerchantAmerica.com		http://www.merchantamerica.com/herbs/index.php?ba=product_e nlarge&product_id=11651
Aristolochia	Long Dan Xie Gan Wan / Long Dan	Morningstarhealth.com		http://www.morningstarhealth.com/store/product133.html
manschuriensis	Xie Gan Pian / Lung Tan Xie Gan	Vitasprings.com Wing Hop Fung Ginseng 4 Less Angel Herb: Herbs for Health MaxNature TCM Healing Center for Men's Diseases Oriental Chinese Medicine Wholesale Retail Company ChineseHerb.com HierbasChinas.com Chinese Patent Medicines		http://www.vitasprings.com/londanxiegan1.html http://www.winghopfung.com/winghopfung/londanxiegan.html http://www.ginseng4less.com/chinese2.html http://www.talonsvcs.com/angelherb/tcm-clear-heat.htm http://www.maxnature.com/londanxiegan.html http://www.mendiseasestcm.com/images/drugstore/product-08-h.htm http://www.tcmtreatment.com/images/herb-supply/product-price/product-08-h.htm http://www.chineseherb.com/Merchant2/merchant.mv?Screen=PR OD&Store_Code=CWH∏_Code=CWH42 http://www.hierbaschinas.com/Merchant2/merchant.mv?Screen=P ROD&Store_Code=HC∏_Code=CWH42 http://www.kangleso.com/more_patent.html http://www.china-guide.com/hr00ld12.html
		China Guide Herbswest.net		http://www.herbswest.net/items/BL2080.shtml
Aristolochia manschuriensis	Q13: Five Types Stranguria Pill (Wu Lin Wan)	TCM Healing Center for Men's Diseases Oriental Wholesale & Retail Company	Guangdong Guoyitang Herbal Manufacturing Co., Ltd.	http://www.mendiseasestcm.com/images/drugstore/product-17- q.htm http://www.tcmtreatment.com/images/herb-supply/product- price/product-17-q.htm
Aristolochia sp.	Chi Kuan Yen Wan	Angel Herb: Herbs for Health Opane.com		http://www.talonsvcs.com/angelherb/tcm-treat-arthritis.htm http://store.yahoo.com/opane/cougchikuany.html http://www.opane.com/cougchikuany.html Health Canada reports this to contain aristolochic acid: http://www.hc- sc.gc.ca/english/protection/warnings/2001/2001_100e.htm
Aristolochia sp.	Guan Xin Su He / Circulatory Cardioflex	Angel Herb: Herbs for Health Opane.com		http://www.talonsvcs.com/angelherb/tcm-orifices.htm http://www.opane.com/circar30pilk.html
Aristolochia sp.	Gui Pi Wan	Doc4Pain.com		http://www.doc4pain.com/.sc/ms/cat/1032987946/9/nc/Hematolo gyEase%20to%20Bruise
Aristolochia sp. (+ Coltsfoot)	Chuan Ke Wan	Herbs West		http://herbswest.net/items/BL1355.shtml
Aristolochia sp. + Clematis sp.	Circula	Opane.com PlazaQ.com		http://store.yahoo.com/opane/mintopici.html http://store.yahoo.com/plusq/mintonpilcir.html

Asaraum canadense	Wild ginger capsules	Taylor's Organic Gardens	Taylor's Organic Gardens	http://www.taylorgarden.com/Products/Bulk_New.asp?Common_Name=Wild%20Ginger
Asarum (canadense)	Old Indian Herbal Syrup	Herbal Advisor	Planetary Formulas	http://www.herbaladvisor.com/topten/xq/asp/qx/guidplan3.htm http://www.herbaladvisor.com/shop/xq/asp/pid.1717/ptid.2066/qx /productDetail.htm
Asarum canadense	Cold Away	Sunriseherbfarm.com		http://www.sunriseherbfarm.com/coldaway.html
Asarum canadense	Cramp Relief	Sunrise Herbal Remedies	Sunrise Herbal Remedies	http://www.sunriseherbfarm.com/cramprelief.html
Asarum canadense	Formula 208	Web Vitamins	Heritage Products	http://www.webvitamins.com/product.aspx?number=HT-FORM208-8Z
Asarum canadense	Mother Earth's Cough Syrup / Mother Earth's Respiratory System Tonic	InterNatural Kalyx.com DiscountBlvd.com NutrtionBlvd.com	Heritage Products	http://store.yahoo.com/internatural/179190.html http://www.kalyx.com/store/proddetail.cfm/ItemID/6722.0/Categ oryID/6000.0/SubCatID/985.0/file.htm http://store.yahoo.com/discountboulevard/188033.html http://store.yahoo.com/nutritionblvd/188033.html
Asarum canadense	Viral Resolve	Sunriseherbfarm.com		http://www.sunriseherbfarm.com/viralresolve.html
Asarum canadense	Wild Ginger tincture	Crucible Catalog	Spagyric Tinctures	http://www.crucible.org/spagyricsS-Z.htm
Asarum canadense	Wild Ginger tincture	Spring Valley Herbs and Natural Foods	Teeter Creek	http://www.springvalleyherbs.com/catalog.php?itemID=2025 http://www.teetercreekherbs.com/single/wildginger.html
Asarum canadense + Akebia trifoliata	Aller Relief b	Spanda	Neo Concept	http://spanda.com/neoprods/neoa.html http://www.neoconcept.com/aller_d.html

^a for Oral Use
^b Footnote added after March 2002: Website no longer lists as ingredients either Asarum canadense or Akebia trifoliata.

Table 2. Botanical Products,^a Available as of March 4, 2003 on the Web, that List Ingredients that May Be Adulterated with Aristolochic Acid

Species	Medicinal Name	Retailer	Manufacturer	Web page with AA Product
Akebia sp.	Akebia	Botanicum		http://botanicum.com/neworder.html
Akebia sp.	Alive Energy: Mental and Emotional Strength Women's Courage 60's	InterNatural		http://store.yahoo.com/internatural/400415.html
Akebia sp.	Circulation: Specific Rubrella Care	Opane.com		http://www.opane.com/cirspecrubca.html
Akebia sp.	Eye Relief Capsules	diabetes-alternative-		http://www.diabetes-alternative-
		medicine.com		medicine.com/diabetesretinopathy.html
Akebia sp.	Genpriv	Mandarin Herbs		http://mandarinherbs.com/genital.htm
Akebia sp.	K-C	The Herb Nook	Nature's Sunshine	http://www.herbnook.com/nspchrb4.htm
		Virtualherbs.com		http://www.virtualherbs.com/store/manf.cfm?categoryID=14
Akebia sp.	Lung Tan Xie Gan Wan Combination	Wing Hop Fung		http://www.winghopfung.com/winghopfung/luntanxiegan.html
Akebia sp.	Shi Chuan Xiu Xue Tang (General Purpose Stop Blood Formula)	Ancient Way Accupuncture & Herbs		http://www.ancientway.com/Pages/MartialArtsFormulas.html
Akebia sp.	Wind-Dispelling Powder (Xiao Feng	Nature's Health		http://www.nature-s-
	San)			health.com/products/herbaltea/auto/fml00043.htm
Akebia sp. + Asarum sp.	Nasixx	MyHerbalRx.com		http://www.myherbalrx.com/products/nasixx2.htm
Akebia sp. + Asarum sp.	Sinus Clear Ephedra Free	Vitanet	Ridge Crest Herbals	http://store.yahoo.com/vitanet/sinclearnoep1.html
Akebia sp. + Stephania	Chinese Kidney Activator (formerly	BlessedNutrition.com		http://www.blessednutrition.com/ns1872-5.html
sp.	K-C)	Herbshop.com		http://www.mindspring.com/~herbshop/urinary.htm
Akebia sp. + Stephania	Chinese Kidney Activator (K-C)	Mind, Body & Soul		http://www.soulhealer.com/1872-5.htm
sp.	[Eliminate Moisture] Qu Shi	Healer		http://www.reynoldsoffice.com/1872-5.htm
		The Reynolds Office of		http://www.gowithherbs.com/1872-5.htm
		Health and Nutrition		http://www.plainherb.com/1872-5.htm
		Go With Herbs Plain Herb		
Akebia sp. + Stephania sp.	K-C (Eliminate Moisture/Qu Shi) - Kidney Support	Superlative Soundness		http://www.junycorp.com/soundness/k-c.html
Akebia trifoliata	Bai Ji Li (5:1 herb extract powder)	Kalyx.com	Plum Flower	http://www.kalyx.com/store/proddetail.cfm/ItemID/15355.0/Cate goryID/13000.0/SubCatID/2855.0/file.htm
Akebia trifoliata	Eight Righteous / Ba Zheng San Wan	Herbswest.net		http://www.herbswest.net/items/13325.shtml
		Jade Chinese Herbs & Extracts		http://www.kangleso.com/jade.html
Akebia trifoliata	Hepataplex	2000 + Nutrition Center		http://www.randallnutritioncenter.com/rcnc2000/tcb9.html
Akebia trifoliata	Kai Kit Wan (Reduce Prostate Swelling Pills)	Herbswest.net		http://www.herbswest.net/items/13956.shtml
Akebia trifoliata	Prostate: Kai Kit Pills	Opane.com	Hanyang pharmaceutical	http://www.opane.com/proskaikitpi.html

Akebia trifoliata	Prostate: Kai Kit Wan	Healing Herbs of China	Plum Flower	http://store.yahoo.com/healingherbsofchina/prosenkaikit.html
Akebia trifoliata	Prostate: Prostate Gland Care	Opane.com		http://www.opane.com/prosprosglan.html
Asarum heterotropoides	Bai Ji Li (5:1 herb extract powder)	Kalyx.com	Plum Flower	http://www.kalyx.com/store/proddetail.cfm/ItemID/15448.0/Cate goryID/13000.0/SubCatID/2855.0/file.htm
Asarum	Bio-Antihist	Natural Health	Ameriden	http://www.naturalhealthconsult.com/Monographs/BioAntihist.ht
heterotropoides		Consultants		ml
Asarum sp.	100% Herbal Treatment for Tinnitis	Young Again Nutrients		http://store.yahoo.com/marcella75/tinnitus.html
Asarum sp.	Asarum	Botanicum		http://botanicum.com/neworder.html
Asarum sp.	AsthmaClear	LifeHealthEnergy.com		http://www.lifehealthenergy.com/htdocs/TheMall/Remedies/asth maclear.htm
Asarum sp.	Azarina	Qlife Batory Asset Managment		http://www.qlife.com/azarina.html http://www.merchantamerica.com/qlife/index.php?ba=product_en large&category=1843&product_id=6747
Asarum sp.	Beijing Tong Ren TangQi Guan Yan Ke Sou Tan Chuan Wan	Opane.com	Tong Ren Tang	http://www.opane.com/beijtonrenta24.html http://store.yahoo.com/plusq/beijtonrenta24.html
Asarum sp.	Breath Easy	NutraCompute		http://www.nutracompute.com/Detail/Breathe_Easy/Item91.htm
Asarum sp.	Chuan Qiong Cha Tiao Pian	VitaSprings.com		http://store.yahoo.com/vitasprings/chuanqioncha.html http://www.vitasprings.com/chuanqioncha.html
Asarum sp.	Clear Tinnnitus	AlzheimerSupport.com ProHealthNetwork.com ChronicFatigueSyndro mSupport.com LifesVigor.com and many others	Clear Products	https://www.alzheimersupport.com/shop/product.cfm?productc ode=N0161 https://www.prohealthnetwork.com/TreatmentCenter/product.cfm ?productcode=N0161 http://www.chronicfatiguesyndromesupport.com/shop/product.cf m?productcode=N0161 http://www.lifesvigor.com/products/575102.html and many others
Asarum sp.	M05: Brain-Conquering Calmness Capsule (Zhen Nao Ning Jiao Nang)	TCM Healing Center for Men's Diseases Oriental Wholesale & Retail Company		http://www.mendiseasestcm.com/images/drugstore/product-13-m.htm http://www.tcmtreatment.com/images/herb-supply/product-price/product-13-m.htm
Asarum sp.	Migrex	MyHerbalRx.com		http://www.myherbalrx.com/products/migrexx.htm
Asarum sp.	Notoptergium Decoction with Nine Herbs (Jiu Wei Qiang Huo Tang)	Nature's Health		http://www.nature-s- health.com/products/herbaltea/auto/fml00018.htm
Asarum sp.	Xiao Qing Long Wan (Concentrated Chinese Herb for Common Cold)	MaxNature.com		http://www.maxnature.com/xiqinlonwanc.html
Clematis chinensis	Diabetics Yu Xiao San 8804	VitaSprings.com Chong's Health Care		http://store.yahoo.com/vitasprings/yuxiaosan8804.html http://store.yahoo.com/cljhealth/yuxiaosan88052.html
Clematis chinensis	Flex N Spring	Health Products Distributors		http://www.integratedhealth.com/hpdspec/cherb.html
Clematis chinensis	Joint Health	N101	Rainbow Light	http://www.n101.com/Static/Products/joint_health_1072301347.h tml
Clematis chinensis	Kam Wo Herbal Tea	PlazaQ.com	Sing-lin	http://store.yahoo.com/plusq/kamwoherteak.html
Clematis chinensis	Tien Hsien Natural Nutritious Liquid	Cancerth.com		http://www.cancerth.com/.sc/ms/cat/1032987946/9/nc/Products Tien%20Hsien%20Natural%20Nutritious

Clematis chinensis	Yu Xiao San 8805	MaxNature.com		http://www.maxnature.com/yuxbasontrad.html
Clematis sp.	40+ Nutritional System Joint Health 90's	InterNatural	Rainbow Light	http://store.yahoo.com/internatural/845092.html
Clematis sp.	Clematis extract	Stakich, Inc.	Stakich, Inc.	http://www.stakich.com/Clematis.htm
Clematis sp.	Eucommia Extract	Opane.com		http://store.yahoo.com/opane/eucex20cap.html
Clematis sp.	Eucommiae Musculosketletal [sic] Support	PlazaQ.com		http://store.yahoo.com/plusq/eucmussup100.html
Clematis sp.	Head Rescue Extract	Sedonalive.com	NOW	http://www.sedonalive.com/nowforms.html
Clematis sp.	Joint Health	NutritionBlvd.com DiscountBlvd.com		http://store.yahoo.com/nutritionblvd/150219.html http://store.yahoo.com/discountboulevard/150219.html
Clematis sp.	Neck and Shoulders Support	iHerb.com	Planetary Formulas	http://store.yahoo.com/iherb/upbacsupplan.html
Clematis sp. + Stephania sp.	Clematis & Stephania	TCMM Formulas		http://www.tcmformulas.com/studentliquidself.htm
Cocculus cordifolia	Guduchi	HerbalRemedies.com	Vadik Herbs	http://store.yahoo.com/herbal-remedies-usa/guduchi50caps.html
Cocculus indicus	Neuran	InnerLife Wellness Center	Växa	http://www.innerlifewellness.com/products/neuran.html
Cocculus indicus	PMS	Spring Valley Herbs	Hyland	http://www.springvalleyherbs.com/catalog.php?itemID=923
Saussurea lappa	BotaniGest	Vitatest	Metagenics	http://www.vitatest.com/ProductDetail.asp?ProductCode=BOTA &Store=METAGENICS
Saussurea lappa	Cardio Flow	Emerson Ecologics	PL	http://www.emersonecologics.com/ProductInformation.asp?BrowseBy=CAR18
Saussurea lappa	Chinese Mood Elevator (AD-C)	1Dietstore.com	Nature's Sunshine	http://www.onedietstore.com/chinese_mood-elv.htm
Saussurea lappa	Chinese Spleen Activator (Wen Zhong) (K3-C)	country-spice.com	Nature's Sunshine	http://www.country- spice.com/webpages/naturesunshine/nachinesespleen.htm
Saussurea lappa	Chinese Stress Relief (STR-C)	Goherbal.com Greatestherbsonearth.co m HerbNook.com	Nature's Sunshine	http://store.yahoo.com/goherbal/1863-5.html http://www.greatestherbsonearth.com/nsp/chinese_stress_relief.ht m http://www.herbnook.com/nspchrb5.htm
Saussurea lappa	Complete Antioxidant Support	Betterlife.com N101	Rainbow Light	http://www.betterlife.com/prod_home_page.asp?prod_id=5194 http://www.n101.com/Static/Products/advanced_nutritional_syste m_1028601377.html
Saussurea lappa	Gastrogen (formerly TCB 6)	eGeneralmedical.com	Metabotanica Method	http://store.yahoo.com/egeneralmedical/gasherforfor.html
Saussurea lappa	Liver/Gallbladder Support	Health Designs International	Botanigest	http://www.healthdesigns.com/ShopSite/Botanige.html
Saussurea lappa	UC-C [Enhance Earth] Wen Zhong	HerbNook.com	Nature's Sunshine	http://www.herbnook.com/nspchrb5.htm
Saussurea lappa	Ultra Energy Plus	NutritionBlvd.com DiscountBlvd.com	Rainbow Light	http://store.yahoo.com/nutritionblvd/150026.html http://store.yahoo.com/discountboulevard/150026.html

Saussurea lappa	Ultra Energy Plus	Internatural.com Enk Natural Thymely Solutions Life's Vigor Herbal Advisor and many others	Rainbow Light	http://store.yahoo.com/internatural/845210.html http://store.yahoo.com/enkuerosnet/21888100620.html http://www.absolutelythepurest.com/realestatesurvivalkit/ultraene rgy.html http://www.lifesvigor.com/products/150026.html http://www.herbaladvisor.com/shop/xq/asp/pid.17724/ptid.18880/ qx/productDetail.htm and many others
Sinomenium acutum	Vine Essence Pills	Solstice Medicine Company	Vine Essence	http://www.sosusaco.com/product/productDetail.asp?iProductID= 227
Stepania sp.	Water Balance Tonic	Elixir	Elixir	http://www.elixir.net/Product_Pages/128_WaterBalance.html
Stephania clematis	OrthoFlex Plus	Betterlife.com	Pacific Biologics	http://www.betterlife.com/prod_home_page.asp?prod_id=7984
Stephania delavaya + Stephania sinica	Spes	Life Extension Vitamins	Botaniclab	http://store.yahoo.com/lifeextensionvitamins/spes.html
Stephania pierrei	Boh Ra Phet Pung Chang Capsule (Saboo Luerd)	Phuketherb.com		http://www.phuketherb.com/pd1021742909.htm
Stephania sp.	Altera Tonic Herbal Supplement: Muscle and Joint Formula	Enk Natural Totaldiscountvitamins.c om	Nature's Answer	http://store.yahoo.com/enkuerosnet/83000011047.html http://www.totaldiscountvitamins.com/Templates/frmTemplateM. asp?CatalogID=2949&SubfolderID=31
Stephania sp.	Basic Formulas Dragon Diet	InterNatural	Dragon Eggs Formulas	http://store.yahoo.com/internatural/575190.html
Stephania sp.	Ignite Your Life	NutritionStreet.com Healthynutritionaldiet.c om		http://www.nutritionstreet.com/360facts.php http://www.healthynutritionaldiet.com/integris/360facts.php
Stephania sp.	Ohco-Motion	NutritionBlvd.com DiscountBlvd.com	OHCO/Orient Herb Company	http://store.yahoo.com/nutritionblvd/496103.html http://store.yahoo.com/discountboulevard/496110.html
Stephania sp.	Over-Eater's Diet	HerbsMD	Alive Energy	http://www.herbsmd.com/shop/xq/asp/pid.7716/qx/productdetail.htm
Stephania sp.	Physical Transformation Formulas Over Eater's	InterNatural	Alive Energy	http://store.yahoo.com/internatural/400135.html
Stephania sp.	Stephania & Astragalus Tea Pills	Morningstarhealth.com	Plum Flower	http://www.morningstarhealth.com/store/product172.html
Stephania sp.	Stephania Astragalus	Kang Le So		http://www.kangleso.com/herbal_patent.html
Stephania sp.	Triphala Herbal Diet Program	Herbal Advisor		http://www.herbaladvisor.com/topten/guidplan.asp
Stephania sp. + Clematis sp.	Clematis & Stephania Formula	Spanda	Golden Flower Chinese Herbs	http://spanda.com/herbs/golden/csf.html
Stephania tetandra	Stephania and Astragalus / Fang Ji Huang Qi Wan	Herbswest.net		http://www.herbswest.net/items/13341.shtml
Stephania tetandra	Weight Loss	Vitamin Proshop	Samra	http://store.yahoo.com/eas4less/samweiglosfo.html

^a for Oral Use

Table 3. Botanical Products, Available as of March 4, 2003 on the Web, that Have No Latin Name But Are Likely To Be Asarum spp.

Species	Medicinal Name	Retailer	Manufacturer	Web page with AA Product
Chinese wild ginger	Bio-Nutritional Formulas Intestinalis	Needs.com		http://www.needs.com/store/product_note.asp?prod_id=812
Chinese wild ginger	Medicated Oil	Solstice Medicine Company	Bee Brand	http://www.sosusaco.com/product/productDetail.asp?iProductID= 150
Chinese wild ginger	Mullein Lung Complex with Ephedra	iHerb.com SeacoastVitamins.com	Planetary Formulas	http://store.yahoo.com/iherb/mullein.html http://www.seacoastvitamins.com/Planetary/mullein.html
Wild ginger	Chinese Specific Cold Pills	Fortune City		http://members.fortunecity.com/davidpilling/html/body_chcoldpills.htm
Wild ginger	Energy Formula	God's Remedy Natural Products		http://godsremedy.com/hepatitis/energy.htm
Wild ginger	Expellin Extract	PlazaQ.com Opane.com	Lanzhou Traditional Herbs	http://store.yahoo.com/plusq/headexexk1.html http://www.opane.com/headexexk1.html
Wild ginger	First Aid Survival Kit	InterNatural	Turtle Island Herbs	http://store.yahoo.com/internatural/299390.html
Wild Ginger	Mother Earth's Cough Syrup	Tao Herb Farm Vitanet	Heritage Products	http://www.taoherbfarm.com/herbs/herbs/horehound.htm http://store.yahoo.com/vitanet/motear4ozher.html
Wild Ginger	Tummy Soother	NutritionBlvd.com DiscountBlvd.com Kalyx.com	Nature's Gate	http://store.yahoo.com/nutritionblvd/225107.html http://store.yahoo.com/discountboulevard/225107.html http://www.kalyx.com/store/proddetail.cfm/ItemID/9207.0/Categ oryID/8000.0/SubCatID/2240.0/file.htm
Wild ginger	URI-pH formula	PlazaQ.com		http://store.yahoo.com/opane/urfork2.html
Wild ginger	Wild ginger tincture	Healingalt.com		http://www.healingalt.com/Products/herbal_tinctures.htm
Wild Ginger / Xi Xin	Du Huo & Loranthus Formula E.C.	Spanda.com	Golden Flower Chinese Herbs	http://spanda.com/herbs/golden/dhl.html
Xi Xin	Allergy Tamer Elixir	Traditions of Tao		http://www.traditionsoftao.com/tot/main/products/elixirs.htm

^a for Oral Use