**Supplementary Table 3.** Detailed heavy metal, adulterants and toxicology analysis by triple quadruple gas chromatography coupled to mass-spectroscopy of 42 samples of retrieved Ayurvedic and herbal medicines

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **CAM sample** | **Au** | **Hg** | **As** | **Pb** | **Ni** | **Al** | **Tl** | **Mn** | **Detected volatile organic and inorganic compounds** | **Other adulterants** |
| 1 | Traditional Ayurvedic tablets | BDR | - | 0.84 | 2.6 | 6.69 | BDR | 0.3 | 136.26 | Muurolene  Benzoic acid | Triacetin  (topical antifungal agent) |
| 2 | Proprietary Ayurvedic tablets | BDR | - | 0.04 | 3.54 | 2.24 | BDR | 0.45 | 29.9 |  |  |
| 3 | Proprietary Ayurvedic tablets | BDR | - | 0.25 | 2.05 | 0.90 | BDR | 0.60 | 16.5 | Benzoic acid 2-hydroxy ethyl ester  Triacetin | Aspirin (nonsteroidal anti-inflammatory drug) |
| 4 | Proprietary Ayurvedic tablets | BDR | - | 24.1 | 18.17 | 27.9 | BDR | 1.06 | 71.85 | Benzoid acid  Carvacrol (natural antimicrobial agent)  Eugenol (topical antiseptic)  Turmerone  Piperine |  |
| 5 | Proprietary Ayurvedic tablets | BDR | - | - | 1.45 | 1.90 | BDR | - | 15.98 | Eugenol  Palmitin -2-mono  Carvacrol  Benzoic acid 2-hydroxy ester |  |
| 6 | Proprietary Ayurvedic tablets | BDR | - | 7.02 | 28.15 | 73.29 | BDR | - | 824.17 | Eugenol  Turmerone  Piperine | Ethanol (2.2 % v/v) |
| 7 | Proprietary Ayurvedic tablets | BDR | - | 0.40 | 2.60 | 13.40 | BDR | 0.20 | 152.1 |  |  |
| 8 | Traditional Ayurvedic capsules | BDR | - | 0.04 | 2.61 | 4.83 | BDR | - | 47.53 | Isoborneol (natural insect repellent, toxic if taken internally)  Eugenol | Ethanol (3% v/v) |
| 9 | Proprietary Ayurvedic tablets | 0.04 | 0.13 | 0.34 | 0.12 | 0.74 | BDR | 0.28 | 1.25 | Benzoid acid 2-hydroxy ester |  |
| 10 | Proprietary Ayurvedic tablets | - | 0.19 | 0.29 | 0.22 | - | BDR | 0.25 | 0.64 | Palmitic acid ethyl ester  Patchouli alcohol (terpene used in perfume industry, precursor for manufacture of chemotherapy drug Paclitaxel) |  |
| 11 | Proprietary Ayurvedic syrup | 0.05 | 0.15 | 0.32 | 0.38 | 0.20 | BDR | - | 0.72 | Methoxy-phenol (also called Mequinol, used as topical agent in depigmentation diseases/ The National Institute for Occupational Safety and Health has set a recommended exposure limit of 5 mg/m3 over an 8-h workday. Internal use prohibited)  Isoeugenol |  |
| 12 | Proprietary Ayurvedic pellets | 0.10 | 0.19 | - | 0.13 | 0.38 | BDR | 0.06 | 1.48 | Palmitic acid  Methoxy-phenol (Mequinol) |  |
| 13 | Proprietary Ayurvedic tablets | 0.15 | 0.10 | 0.42 | 0.71 | 19.48 | BDR | 0.06 | 8.39 | Piperine  Palmitic acid ethyl-ester  Carvacrol  Thymol  p-Cymene  Terpinene |  |
| 14 | Traditional Ayurvedic tablets | 0.10 | 0.29 | 0.69 | 0.31 | 1.13 | BDR | 0.12 | 7.58 | Thymol  Piperine  Palmitic acid ethyl-ester |  |
| 15 | Traditional Ayurvedic tablets | 0.48 | 0.10 | - | 1.20 | 3.84 | BDR | 0.04 | 23.29 | - | - |
| 16 | Traditional Ayurvedic dried herb mixtures | 1.06 | 0.15 | - | 0.98 | 2.61 | BDR | - | 88.74 | Eucalyptol  Thymol  Turmerone  Piperine |  |
| 17 | Proprietary Ayurvedic tablets | 1.44 | - | 0.19 | 0.14 | BDR | BDR | BDR | BDR | Sesquiphellandrene  Patchouli alcohol  Butanone (also called methyl-ethyl-ketone; as of 2010, caution advised in using butanone due to reports of neuropsychological effects. It is listed as a Table II precursor under the United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances)  Cinnamaldehyde  Coumarin (anticoagulant agent)  Zingiberene  Retusine  Retrofractamide-A (natural alkaloid that promotes adipogenesis)  Shogaol  Lupenone  Isolongifolen-5-one  Capsaicin  n-trans-nerolidol  Copaene  Caryophyllene | Vitamin E  Asarone (component of pesticide) |
| 18 | Proprietary Ayurvedic tablets | 1.32 | - | 0.41 | - | BDR | BDR | BDR | BDR | Turmerone  Asarone  Nicotinic acid  P-anisaldehyde,3-hydroxy  Vanillin | Adrafinil - a eugeroic and antidepressant drug used to improve alertness, attention, wakefulness and mood. Off label use in night workers to avoid fatigue; used as an ‘all night party drug’. Marketed in France under the trade name Olmifon until September 2011 when it was voluntarily discontinued |
| 19 | Traditional Ayurvedic tablets | 1.33 | - | 0.53 | - | BDR | BDR | BDR | BDR | Nortrachelogenin (very toxic to aquatic life [Warning] / acute hazard)  Ethyl-p-methoxy cinnamate  Ethanolamine |  |
| 20 | Proprietary Ayurvedic powder | 1.1 | - | 0.36 | - | BDR | BDR | BDR | BDR | Trans-sinapyl alcohol | Adogen 73 also known as oleamide, used to induce drowsiness or sleep or to reduce psychological excitement or anxiety |
| 21 | Traditional Ayurvedic syrup | 1.23 | - | 0.30 | - | BDR | BDR | BDR | BDR | Di-palmitin |  |
| 22 | Traditional Ayurvedic capsules | BDR | - | 0.12 | 3.57 | BDR | BDR | BDR | BDR | Betulin | Vanadium 1.2 mg/kg |
| 23 | Traditional Ayurvedic pellets | BDR | - | 0.38 | 1.48 | BDR | BDR | BDR | BDR | Monobutyrin | Glutaconic acid – can cause neurodegenerative diseases in accumulated doses  Vanadium 0.09 mg/kg |
| 24 | Traditional Ayurvedic powder | BDR | 0.08 | - | 0.08 | 32.43 | BDR | BDR | 3.06 | Fagarine (mutagenic)  O- methoxy benzyl amine  R-Limonene  Benzoylecgonine  Oxamniquine  Phlorizin  Amphibine D  Piperine  Dasycarpidone  Adenylosuccinic acid  Isolupanine  Berginin  Curcumene  Diaziquone  Ethyl-xanthine  Copaen-11-ol  Isoaromadehdrene epoxide  6,7-dimethoxy-4-ethyl coumarin-  Tetralone, 2-amino-5,6-dimethoxy-  Benzene, 1,2-(methylenedioxy)-4-propenyl  Cubebol  Copaene | Salinomycin (antibiotic)  Oxymatrine (extracted from a traditional Chinese herb, *Sophora flavescens Ait*, used as antiviral previously, associated with systemic toxicity and is an irritant)  Mefluidide (Vistar Herbicide) |
| 25 | Proprietary Ayurvedic powder | BDR | 0.14 | - | - | 1.50 | BDR | BDR | 1.55 | Piperine  Hexa-hydro-farnesol  Carnegine  4. 1-[2-[2-Bromo acetamido] ethyl] hypoxanthine  6-Hydroxy- 1,2,3,4-tetra-hydro-1-Isoquinoline carboxylic acid  Benzaldoxime  Thymol  R-Limonene  Carvacrol  Benmoxin  Benzamidine  2-pyridyl thioamide  Bavachinin  Thiazole, 4-(4-aminophenyl)-2-amino | Lincomycin (antibiotic) Mefluidide  (Vistar Herbicide)  Roscovitine (chemotherapeutic agent)  Metapramine (tricyclic antidepressant) |
| 26 | Proprietary Ayurvedic powder | BDR | 0.15 | - | - | 19.12 | BDR | BDR | 26.68 | Diaziquone  Hexa-hydro-farnesol  Benzamidine  2-Norpinene-2-carboxaldehyde | Salinomycin (antibiotic)  Mefluidide  (Vistar Herbicide)  Roscovitine (chemotherapeutic agent) |
| 27 | Traditional Ayurvedic syrup | - | - | - | 0.25 | - | - | - | - |  |  |
| 28 | Traditional Ayurvedic powder | 0.20 | 0.35 | - | 2.09 | 7.48 | - | - | 22.94 | Terpinene  Squalene  Sito-sterol  Lupeol | Methoxy-phenol (Mequinol)  Guanosine  Pachybioside  Trans-sinapyl alcohol  Sinapic acid, methyl ester |
| 29 | Traditional Ayurvedic tablets | BDR | 0.01 | 84.9 | 15.1 | 0.87 | 18.56 | 0.07 | BDR | Fagarine  Marmesin  Endoborneol | Chromium (5.39 mg/kg)  Ethanol (7.6% v/v)  Methoxy-phenol (Mequinol) |
| 30 | Traditional Ayurvedic syrup | BDR | 1.77 | 116.11 | 73.37 | 0.89 | 26.02 | 1.02 | BDR | 1-(4-hydroxy-3- methoxy phenyl)- dec-4-en-3-one  p-cymene-2,5-diol  Vanillin | Ethanol (4.0% v/v)  Chromium (8.03 mg/kg) |
| 31 | Liv. 52 tablets (Himalaya® proprietary ayurvedic product) | BDR | 0.28 | 119.43 | 13.45 | 0.82 | - | - | BDR | Propyl paraben  Methyl paraben  Eugenol  p-Cymene-2,5-diol | Spirono Lactone (diuretic drug)  Chromium (7.38 mg/kg) |
| 32 | Liv 52. DS (Himalaya® proprietary ayurvedic product) | BDR | 0.52 | 33.28 | 18.56 | 2.94 | - | - | - | Sitosterol  Stigma sterol  Camphesterol  d-Sesamin  Cholesta-5,7-dien-3-ol  Methyl eugenol  Methyl paraben  Poly paraben  Curlone | Zolmitriptan (drug used in the acute treatment of migraine attacks and is a selective serotonin receptor agonist of the 1B and 1D subtypes)  Clonazepam (medication used to prevent and treat seizures, panic disorder, and movement disorder. Also used a tranquilizer/sedative and belong to the class of the benzodiazepine)  Vitamin E  Metapramine (antidepressant medication with analgesic property)  Chromium (9.92 mg/kg) |
| 33 | Unknown capsules | BDR | 0.32 | 10.61 | 22.47 | 2.15 | - | - | - | Sitosterol  Stigma sterol  Camphesterol  Betullin  Phorbol  Corymbolone  Levoverbenone  α-Cyclocostunolide | Chromium (9.93 mg/kg) Vitamin E  Amoxicillin (antibiotic) |
| 34 | Proprietary Ayurvedic tablet | - | 8.01 | 2.56 | 23.17 | 6.11 | 68.85 | - | BDR | Methyl paraben  Apocynin  d-Sesamin  Sitosterol | Vitamin E  Metapramine (tricyclic antidepressant) |
| 35 | Traditional Ayurvedic powder | - | 1.0 | - | 0.41 | 0.75 | 108.69 | - | BDR | m-Guaicol  2-Methoxy hydroquinone  Eudesmol  Bisabolol  Homopterocarpin  Squalene | Vitamin E |
| 36 | Unknown Ayurvedic powder | - | - | - | 0.29 | 0.97 | 209.2 | 0.08 | BDR | Patchouli alcohol  2-Chloroethyl palmitate  Cubebene |  |
| 37 | Ayurvedic syrup | - | 0.64 | 0.53 | 0.39 | 0.63 | 62.94 | 0.25 | BDR | Scopoletin  Syringic acid  Propyl paraben  Methyl paraben | Piracetam (cyclic derivative of gamma-aminobutyric acid, is an anticonvulsant and mood enhaBDRer drug  Chlorambucil (a nitrogen mustard alkylating agent used as antineoplastic agent for the treatment of various malignant and non-malignant diseases)  Oxymetazoline (selective α1 adrenergic receptor agonist and α2 adrenergic receptor partial agonist used as a topical decongestant and is a local vasoconstrictor) |
| 38 | Ayurvedic tablets | - | 0.85 | - | 10.1 | 4.29 | 418.4 | 2.40 | BDR | Neoisopulegol  Pogostole  Palustric acid  Pimaric acid  Acorenol  Ledol  (A poisonous sesquiterpene that can cause cramps, paralysis, and delirium. Ledol containing Rhododendron plants were used by Caucasian peasants. These effects in shamanistic rituals) | Cadmium (4.2 mg/kg)  Methyl abietate and abietic acid  (Component of all forms of cleaning/washing, including cleaning products used in the home, laundry detergents, soaps, de-greasers, spot removers, etc., highly irritant and hazardous, toxic) |
| 39 | Ayurvedic tablets | - | 1.15 | - | 4.36 | 3.87 | BDR | 0.01 | BDR | Retrofractamide  Propyl paraben  Hydrocinnamic acid  Anethole |  |
| 40 | Unknown tablet | BDR | 0.05 | 0.30 | 0.42 | 0.54 | BDR | - | BDR | Camphor  Curcuphenol  Isoetharine  Elemenone | Diclofenac (nonsteroidal anti-inflammatory drug) |
| 41 | Unknown capsule | BDR | 0.17 | 0.01 | 1.17 | 0.82 | BDR | - | BDR | Terpinen-4-ol  Safrole  Myristic acid  Thunbergol  Licarin-B  Squalene  Chenodiol | 2-Methoxy-4-vinyl phenol (industrial solvent) |
| 42 | Unknown liquid | BDR | 0.03 | 0.16 | 0.57 | 0.50 | BDR | 0.52 | BDR | Carveol  Ethyl-p-methoxy cinnamate  Lupeol | Prostaglandin A1  Biotin |

Abbreviation: BDR, below detectable range.

Heavy metals quantification in mg/kg.