

Supplementary Table 2: The preparation and chemical analysis of the oral treatments of herbs and their active constituents

Species/compound, source, concentration	Quality control reported? (Y/N)	Chemical analysis reported? (Y/N)	Purity (%) [For compound only]	References
Whole plant of <i>Angelica gigas</i> Nakai, [Ginbu GAP Farming Corp], 330 g No voucher specimen or batch number was mentioned	Y- Air-dried and extracted with 95% ethanol at 80°C for 4 h using the machine to obtain the extract, which was then concentrated. The extract was collected, concentrated again using a rotary vacuum evaporator.	N	N/A	(102)
Whole plant of <i>Artemisia caruifolia</i> Buch. -Ham. ex Roxb., [Yeongcheon Oriental Herbal Market], 30 g No voucher specimen or batch number was mentioned	Y- Extracted with 70% ethanol in a 40°C shake-incubator for 24 h and filtered. The freeze-dried extract powder was dissolved in dimethyl sulfoxide and centrifuged at 14,000 rpm for 10 min. The resulting supernatant was filtered.	Y- HPLC-UV/VIS	N/A	(144)
Roots of <i>Ribes fasciculatum</i> var. <i>chinense</i> MAX., [Human herb (Gyeongbuk, Korea)], 100 g No voucher specimen or batch number was mentioned	Y- Chopped with 70% ethanol solution under room temperature for 24 h and then filtered on a water bath under vacuo, frozen and lyophilized to yield ethanol extracts.	Y- HPLC	N/A	(54)
Roots of <i>Sanguisorba officinalis</i> L. (Rosaceae), [Yeongcheon Oriental Herbal Market], 50 g No voucher specimen or batch number was mentioned	Y- Extracted using 70% ethanol in a 40°C shaking incubator for 24 h.	N	N/A	(146)

Barks of <i>Poria cocos</i> F.A. Wolf, [Plant Extract Bank of Korea]	Y- Extracted using 95% ethanol.	N	N/A	(6)
No information on the concentration of the herb				
No voucher specimen or batch number was mentioned				
Whole plants of <i>Salvia plebeia</i> R. Br. (Lamiaceae), [herbal store in Jeongeup, Korea], 30 kg	Y- Ground and extracted with 95% ethanol for 2 weeks at room temperature. The ethanol extract was then concentrated with a rotary evaporator under reduced pressure to give a dried residue.	Y- HPLC	N/A	(20)
Voucher specimen (number WSP-11-114) was deposited at the Herbarium of the College of Pharmacy, Woosuk University				
Tubers of <i>Helianthus tuberosus</i> L., [Yangwonfood (Cheonan, Korea)]	Y- Extracted with 30% ethanol then filtered, lyophilized, and stored at 4°C.	N	N/A	(58)
No information on the concentration of the herb				
No voucher specimen or batch number was mentioned				
<i>Tabebuia avellanedae</i> Lorentz ex Griseb., [Nutribiotech Co. Ltd. (Seoul, Korea)]	N	N	N/A	(108)
No information on the part of the herb and the concentration of the herb				
No voucher specimen or batch number was mentioned				

<p><i>Artemisia argyi</i> H. Lév. & Vaniot, [Omniherb Co., Ltd. (Daegu, South Korea)], 100 g</p>	<p>Y- Mixed with 75% ethanol at 60°C, incubated for 24 h and filtered.</p>	<p>N</p>	<p>N/A</p>	<p>(34)</p>
<p>No information on the part of the herb</p>				
<p>Voucher specimen (DKMP-201203-AAFE) was deposited at Korean Medical Physiology Laboratory, Dong-Eui University</p>				
<p>Whole plant of <i>Persicaria tinctoria</i> (Aiton) Spach, [cultivated traditionally in Naju, republic of Korea]</p>	<p>Y- Extracted with distilled water at 80°C for 3 h and filtered. The filtered extracts were lyophilized and reduced to powder.</p>	<p>Y- HPLC</p>	<p>N/A</p>	<p>(35)</p>
<p>No information on the concentration of the herb</p>				
<p>No voucher specimen or batch number was mentioned</p>				
<p><i>Angelica dahurica</i> (Hoffm.) Benth. & Hook.f. ex Franch. & Sav., [Han-poong Pharm Co., Ltd (Jeonjoo, Republic of Korea)]</p>	<p>N</p>	<p>N</p>	<p>N/A</p>	<p>(69)</p>
<p>No information on the part of the herb and the concentration of the herb</p>				
<p>No voucher specimen or batch number was mentioned</p>				
<p><i>Ixeris dentata</i> (Thunb.) Nakai (Compositae), [Wonkwang Institute of Biomedical Engineering Research]</p>	<p>Y- Decocting the herbs with distilled water for 3 h and filtered and kept at 4°C.</p>	<p>N</p>	<p>N/A</p>	<p>(49)</p>

No information on the part of the herb and the concentration of the herb

Voucher specimen (No. 05-17-12) was deposited at the Herbarium of the College of Pharmacy, Wonkwang University

<i>Panax ginseng</i> C.A. Mey., [Gansando agriculture cooperation, Jinan, Republic of Korea], 5 g	Y- Extracted with distilled water using a reflux condenser. The extract was then filtered and condensed under a vacuum.	N	N/A	(109)
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No information on the part of the herb
No voucher specimen or batch number was mentioned

Roots of <i>Panax ginseng</i> Meyer, [Korea Ginseng Corporation (Daejeon, Korea)]	Y- Steaming fresh ginseng at 90-100°C for 3 h and then drying at 50-80°C, extracted with water for 8 h.	Y- HPLC	N/A	(60)
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No information on the concentration of the herb

No voucher specimen or batch number was mentioned

Roots of <i>Polygala tenuifolia</i> Willd. [Oriental drug store (Dongwoodang Pharmacy Co., Ltd., Yeongcheon, Republic of Korea)], 120 g	Y- Immersed in distilled water, heated at 100°C, concentrated using a rotary evaporator and lyophilized using a freeze dryer.	Y- UPLC–ESI–MS	N/A	(126)
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Voucher specimen (No. D0801130PTW) was deposited at the herbarium located in the college of Korean

Medicine, Kyung Hee University				
<p>Roots of <i>Liriope muscari</i> (Decne.) L.H. Bailey [plantations in the Miryang area (Korea)], 200 g</p> <p>Voucher specimens of LP (WPC-11-010) were deposited in the Functional Materials Bank of the PNU-Wellbeing RIS Center at Pusan National University</p>	<p>Y- Dry roots were steamed at 99°C for 3 h, air-dried at 70°C for 24 h then reduced to powder, distilled water was added to the powder and the aqueous extracts were purified for 2 h at 100°C.</p>	Y- HPLC	N/A	(72)
<p>Dried whole plant of <i>Saussurea lappa</i> (Decne.) C.B. Clarke, [HMAX (Jecheon, Korea)], 100 g</p> <p>Voucher specimen (2009-KIOM62) has been deposited in the K-herb Research Center, Korea Institute of Oriental Medicine</p>	<p>Y- Extracted three times with 70% methanol (1 L) by refluxing for 90 min, then filtered, evaporated to dryness, and freeze-dried.</p>	N	N/A	(87)
<p>Dried whole plant of <i>Saussurea lappa</i> (Decne.) C.B. Clarke, [HMAX (Jecheon, Korea)], 100 g</p> <p>Voucher specimen (2009-KIOM62) has been deposited in the K-herb Research Center, Korea Institute of Oriental Medicine</p>	<p>Y- Extracted three times with 70% methanol (1 L) by refluxing for 90 min, then filtered, evaporated to dryness, and freeze-dried.</p>	N	N/A	(86)
<p>Stems of <i>Dendrobium officinale</i> Kimura & Migo, [green house of Chaoyang University of Technology]</p>	<p>Y- Dried stems of was grinded into fine powder, dissolved in methanol and sonicated at an amplitude of 15 for 10 min.</p>	Y- LC/MS	N/A	(137)

No information on the concentration of the herb

Voucher specimen number: (CMC DT 0303) has been deposited at the Institute of Chinese Pharmaceutical Sciences, China Medical University

Dried whole plant of <i>Patrinia scabiosifolia</i> Link, [Korea Plant Extract Bank, Korea Research Institute of Bioscience and Biotechnology (Daejeon, Korea)], 33 g	Y- Dried, powdered, and then underwent extraction with DMSO for 1 day at room temperature.	N	N/A	(13)
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Voucher specimens (031 - 037) were deposited at the herbaria of the Department of the Herbal Pharmaceutical Development, Korea Institute of Oriental Medicine, Daejeon, Korea

Byakkokakeishito <ul style="list-style-type: none">• Gypsum (natural hydrous calcium sulfate), lot no. 7H16 M• Rhizome of <i>Anemarrhena asphodeloides</i> Bunge, 0E22• Bark of the trunk of <i>Cinnamomum verum</i> J. Presl, 6K20 M• Seed of <i>Oryza sativa</i> L., 5G29	Y- Cutting or crushing of the whole crude drugs, boiled in 600 ml of distilled water for 60 min. The crude drugs were then removed from the paper bags and the decoctions were lyophilized.	Y- HPLC	N/A	(90)
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[all purchased from
Daiko Shoyaku (Nagoya,
Japan)]

- Root and stolon
of
Glycyrrhiza
uralensis Fisch.
ex DC., [Tsumura
(Tokyo, Japan)],
23040711

No information on the
concentration and ratio of
the herbs

Qingre-Qushi	Y- The four herbs (4:4:1:4) were soaked in water and boiled at 100°C twice, 1 h each time then filtered through a Whatman number 2 filter paper, concentrated under vacuum conditions, and freeze- dried.	Y- HPLC	N/A	(14)
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- *Hedyotis diffusa*
Willd.
- *Taraxacum* (no
specific species
was mentioned)
- *Xanthium*
sibiricum Patrin
ex Widder
- *Sophora*
flavescens Aiton

[Shuguang Hospital
Affiliated with the
Shanghai Chinese
Medicine University]

No information on the
concentrations of each
herb

No voucher specimen or
batch number was
mentioned

Yu-Ping-Feng-San	Y- Herbal mixture (RA: RAM: RS in a 3:1:1) were extracted twice with boiling water and further evaporated to crude extracts.	Y- HPLC	N/A	(148)
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- *Astragalus*
mongholicus
Bunge;
[Zhangzhou
Fushun
Pharmaceutical

Co., Ltd. (Inner
Mongolia,
China)]

- *Atractylodes
macrocephala*
Koidz. [Shanxi
Wanhui
Pharmaceutical
Co., Ltd.
(Zhejiang,
China)]
- *Saposhnikovia
divaricata* (Turcz.
ex Ledeb.)
Schischk.,
[Herbal
Decoction Slices
division of
Nanjing
Pharmaceutical
Company
(Heilongjiang,
China)]

No information on the
concentrations of each
herb

No voucher specimen or
batch number was
mentioned

Yu-Ping-Feng-San	Y- Immersed (3:1:1) in ethanol for 1 h and then refluxed for 2 h. The extraction process was repeated twice and the extracts were combined, filtered, and evaporated to dryness using a vacuum concentrator system.	Y- HPLC	N/A	(138)
• <i>Astragalus mongholicus</i> Bunge; [Zhangzhou Fushun Pharmaceutical Co., Ltd. (Inner Mongolia, China)], 20150601				

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- *Atractylodes macrocephala* Koidz., [Shanxi Wanhui Pharmaceutical Co., Ltd. (Zhejiang, China)], 150102
 - *Saposhnikovia divaricata* (Turcz. ex Ledeb.) Schischk., [Herbal Decoction Slices division of Nanjing Pharmaceutical Company (Heilongjiang, China)], 20150601

No information on the concentrations of each herb

Pentaherbs	Y- Extracted by refluxing in boiling water at 100°C for 1h. Extraction was repeated twice to obtain total water crude extract. The filtered extract was freeze-dried into powder.	Y- HPLC	N/A	(131)
<ul style="list-style-type: none"> • <i>Lonicera japonica</i> Thunb., 5 g • <i>Mentha canadensis</i> L., 2.5 g • <i>Paeonia suffruticosa</i> Andrews, 5 g • <i>Atractylodes lancea</i> (Thunb.) DC., 5 g • <i>Phellodendron amurense</i> Rupr., 5 g 				

No information of the supplier and the ratio of the herbs

No voucher specimen or batch number was mentioned				
Hataedock	Y- Herbs (1:1) were boiled for 3 hours in distilled water and then filtered, concentrated by using a rotatory vacuum evaporator and then freeze-dried to obtain the extract.	Y- HPLC	N/A	(64)
<ul style="list-style-type: none"> • <i>Glycine max</i> (L.) Merr., [Namyong Pharm (Muju, Republic of Korea)], 100 g • <i>Artemisia caruifolia</i> Buch. - Ham. ex Roxb. • <i>Morus alba</i> L. 				
No information of the supplier and the concentration of the herbs				
No voucher specimen or batch number was mentioned				
Hataedock	Y- Herbs (1:1) were powdered and boiled for 3 h in distilled water then the resulting extract was filtrated, concentrated and freeze-dried.	Y- HPLC	N/A	(12)
<ul style="list-style-type: none"> • <i>Coptis japonica</i> (Thunb.) Makino, [Omniherb (Yeongcheon, Korea)], 100 g • <i>Glycyrrhiza uralensis</i> Fisch. ex DC., [Omniherb (Yeongcheon, Korea)], 100 g 				
Hataedock	Y- Herbs (1:1) were decocted in distilled water for 3 hours and then filtered; after concentrating, the filtrate was freeze-dried.	Y- HPLC	N/A	(11)
<ul style="list-style-type: none"> • <i>Coptis chinensis</i> Franch., 100 g • <i>Glycyrrhiza uralensis</i> Fisch. ex DC., 100 g 				
No information of the supplier				

No voucher specimen or batch number was mentioned

Soshiho-tang	Y- Extracted in distilled water at 100°C for 120 min, the extract was filtered through a standard sieve, evaporated and freeze-dried into powder.	Y- UPLC	N/A	(79)
<ul style="list-style-type: none">• <i>Bupleurum falcatum</i> Linne• <i>Pinellia ternate</i> Breitenbach• <i>Zingiber officinale</i> Roscoe• <i>Scutellaria baicalensis</i> Georgi• <i>Panax ginseng</i> C.A. Meyer• <i>Glycyrrhiza uralensis</i> Fischer• <i>Zizyphus jujube</i> Miller var. <i>inermis</i> Rehder				

[Omniherb (Korea) and HMAX (China)]

Voucher specimens (2008-KE26-1 ~ KE26-7) have been deposited at the K-herb Research Center, Korea Institute of Oriental Medicine

No information on concentration and ratio of the herbs

Gamisasangja-tang	Y- Boiling the herbs (1:1:1:1:0.5:0.5) in distilled water at 100°C for 2h. The boiled herbs were then filtered through a Whatman no.2 filter, concentrated under vacuum conditions, and freeze-dried.	Y- HPLC	N/A	(106)
<ul style="list-style-type: none">• <i>Stemona sessilifolia</i> (Miq.) Miq.• <i>Spirodela polyrhiza</i> (L.) Schleid.• <i>Cnidium monnieri</i> (L.) Cusson				

- *Sophora flavescens* Aiton
- *Angelica gigas* Nakai
- *Clematis terniflora* var. *mandshurica* (Rupr.) Ohwi

[Dong Kyung Pharm Co., Ltd. (Seoul, Korea)]

Voucher specimens (No. 2014-004 to 009) were deposited at the College of Oriental Medicine, Daejeon University, Daejeon, Korea

No information on concentration of the herbs

SSC201	Y- Boiling the three herbs (1:1:1) in distilled water at 100°C for 2 h. The boiled herbs were then filtered through a Whatman no. 2 filter, concentrated under vacuum conditions and freeze-dried.	Y- HPLC	N/A	(105)
<ul style="list-style-type: none"> • <i>Stemona japonica</i> (Blume) Miq. • <i>Spirodela polyrhiza</i> (L.) Schleid. • <i>Cnidium monnieri</i> (L.) Cusson 				

[Nanum Pharm Co., Ltd. (Yeongcheon, Gyeongbuk, Korea)]

No information on concentration of the herbs

No voucher specimen or batch number was mentioned

CP001	Y- 30% ethanol extracted brown-colored powder.	Y- HPLC	N/A	(66)
<ul style="list-style-type: none"> • <i>Houttuynia cordata</i> Thunb 				

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- *Rehmannia glutinosa* (Gaertn.) DC.
 - *Betula platyphylla* var. *japonica*
 - *Rubus coreanus* Miq.

[Hanpoong Pharmaceutical (Jeon-ju, Korea)]

No information on concentration and ratio of the herbs

No voucher specimen or batch number was mentioned

Huang-Lian-Jie-Du <ul style="list-style-type: none"> • <i>Coptis chinensis</i> Franch. • <i>Scutellaria baicalensis</i> Georgi • <i>Phellodendron chinense</i> C.K. Schneid. • <i>Gardenia jasminoides</i> J. Ellis 	Y- Herbs (3:2:2:3) were ground to powder or pieces and mixed. The mixture was extracted with 80% aqueous ethanol in an ultrasonic bath for 30 min and then was filtered.	Y- HPLC	N/A	(15)
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[Zhixin Herbal Pharmaceutical Company Ltd]

Voucher specimen (no. AD01–04) were deposited in the Herbarium of the School of Chinese Medicine, CUHK

No information on concentration of the herbs				
Sanpaocao	Y- Herbs (1:1:1) were extracted with 70% ethanol using maceration for 3 days with 90 rmp shaking at 40°C, repeated three times. The extract was filtered through a cotton bed followed by Whatman No. 1 filter paper. The filtrate was evaporated under reduced pressure at 45°C using a Buchii Rotaroy Evaporator to leave a gummy concentrate and through vacuum drying.	N	N/A	(121)
<ul style="list-style-type: none"> • <i>Cardiospermum halicacabum</i> L., 200 g • <i>Physalis angulata</i> L., 200 g • <i>Ludwigia adscendens</i> (L.) H. Hara, 200 g 				
[Haikou, Hainan Province, China]				
No voucher specimen or batch number was mentioned				
BuShenYiQi	Y- Soaked in water for 2h and extracted twice with H ₂ O at 100°C for 1h, the filtered liquid was concentrated to a clear cream. After spray drying, the spray powder was mixed homogeneously and made into mesh particles.	Y- LC-ESI-Q-TOF-MS	N/A	(68)
<ul style="list-style-type: none"> • <i>Astragalus mongholicus</i> Bunge, 1204811 • <i>Epimedium sagittatum</i> (Siebold & Zucc.) Maxim, 1111018 • <i>Rehmannia glutinosa</i> (Gaertn.) DC., 1203813 				
[Anhui Benciao ChineseMedicine Herb Pieces Co., Ltd (Bozhou, China)]				
No information on the concentration and the ratio of the herbs				
Yupingfeng		N	N/A	(147)

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- *Astragalus mongholicus* Bunge
 - *Atractylodes macrocephala* Koidz.
 - *Saposhnikovia divaricata* (Turcz. ex Ledeb.) Schischk.

[Guangdong HuanQiu Pharmaceutical Company]

No information on the concentration and ratio of the herbs

No voucher specimen or batch number was mentioned

PTQX	N	Y- UHPLC-LTQ-Orbitrap-MS	N/A	(139)
<ul style="list-style-type: none"> • <i>Atractylodes macrocephala</i> Koidz., 10 g • <i>Pseudostellaria heterophylla</i> (Miq.) Pax, 10 g • <i>Dioscorea oppositifolia</i> L., 15 g • <i>Coix lacryma-jobi</i> var. <i>ma-yuen</i> (Rom.Caill.) Stapf, 20 g • <i>Imperata cylindrica</i> (L.) P. Beauv., 15 g • <i>Forsythia suspensa</i> (Thunb.) Vahl, 10 g • <i>Dictamnus dasycarpus</i> Turcz., 10 g 				

-
- Margarita, 0.3g
(no specific species)
 - *Glycyrrhiza glabra* L., 5 g

[Jiangyin Tian Jiang
Pharmaceutical Co., Ltd.
(Jiangsu, China)]

The formula has been
patented for the treatment
of AD (patent no.:
ZL2013 1 0328668.4,
China

Taeumjowi-tang	N	Y- UPLC	N/A	(107)
<ul style="list-style-type: none"> • <i>Coix lacryma-jobi</i> var. ma-yuen (Rom.Caill.) Stapf • <i>Castanea crenata</i> Siebold & Zucc. • <i>Raphanus raphanistrum</i> subsp. sativus (L.) Domin • <i>Schisandra chinensis</i> (Turcz.) Baill. • <i>Platycodon grandiflorus</i> (Jacq.) A. DC. • <i>Acorus gramineus</i> Aiton • <i>Ephedra sinica</i> Stapf • <i>Liriope muscari</i> (Decne.) L.H. Bailey 				

[I-World Pharm. Co.
(Incheon, Republic
of Korea)]

No information on the concentration and the ratio of the herbs
No voucher specimen or batch number was mentioned

Jianpi Chushi	Y- Boiled for 30 min, filtrated and concentrated.	N	N/A	(133)
<ul style="list-style-type: none">• <i>Poria cocos</i> F.A. Wolf, 20 g• <i>Dioscorea oppositifolia</i> L., 20 g• <i>Dictamnus dasycarpus</i> Turcz., 20 g• <i>Zaocys dhumnade</i>, 15 g (no information in MPNS)• <i>Atractylodes lancea</i> (Thunb.) DC., 15 g• <i>Citrus aurantium</i> L., 15 g• <i>Scutellaria baicalensis</i> Georgi, 10 g• <i>Sophora flavescens</i> Aiton, 10 g• <i>Paeonia lactiflora</i> Pall., 10 g• <i>Glycyrrhiza glabra</i> L., 5 g				

[Tibet Qizheng Tibetan Medicine Ltd.]

No information on the ratio of the herbs

No voucher specimen or batch number was mentioned

Calycosin (pure compound)	N/A	N/A	≥ 98.75%	(129)
[Tianjin Marker Bio-Tech Co. Ltd. (Tianjin, China)]				
No information on the concentration of the compound				
Phycion (pure compound)	N/A	N/A	≥ 98%	(96)
[Cayman Chemical Company (Ann Arbor, MI, USA)]				
No information on the concentration of the compound				
Chrysophanol	N/A	N/A	N	(37)
[Sigma Chemical Co.]				
No information on the concentration of the compound				
Cimifugin (pure compound)	N/A	N/A	≥ 99%	(135)
[National Institutes for Food and Drug Control (Shanghai, China)]				
No information on the concentration of the compound				
Esculetin, 20 mg (112.27μMol)	Y- Refluxed twice with 95% ethanol for 2 h. The extracted solution was filtered through a filter paper. The filtrate was concentrated to dryness by a rotary evaporator under reduced pressure below 40°C. The extract was suspended in	Y- NMR	N	(50)
[local market (Daegu, Republic of Korea)]				

	distilled water and successively partitioned. 5 fractions were re-chromatographed by using silica gel to yield six subfractions.				
Paeonol		N	N	N	(94)
[National Institutes for Food and Drug Control (Beijing, China)]					
No information on the concentration of the compound					
Gintonin	Y- 4-year-old ginseng was ground into small pieces and refluxed with 70% fermented ethanol eight times for 8 h each at 80°C. The extracts were concentrated, dissolved in distilled, cold water and stored at 4°C for 24–96 h. The supernatant and precipitate of water fractionation after ethanol extraction of ginseng was separated by centrifugation. The precipitate after centrifugation was lyophilized.		N	N	(75)
No information of the supplier and the concentration of the compound					
Tryptanthrin		N	N	N	(36)
No information of the supplier and the concentration of the compound					
Thymoquinone		N	N	≥ 98%	(5)
[Sigma Aldrich (US)]					
No information on the concentration of the compound					

N/A: Not applicable or the articles did not mention the parts of the plant used nor the concentration and purity, ESI: electrospray ionization, MS: mass spectrometry, UPLC: ultra-performance liquid

chromatography, HPLC: high-performance liquid chromatography, QTOF: Quadrupole Time-of-Flight, NMR: nuclear magnetic resonance, MPNS: Medicinal Plant Names Services