

Bharathi Avula

List of Publications by Year in Descending Order

Source: <https://exaly.com/author-pdf/6538177/bharathi-avula-publications-by-year.pdf>

Version: 2024-04-23

This document has been generated based on the publications and citations recorded by exaly.com. For the latest version of this publication list, visit the link given above.

The third column is the impact factor (IF) of the journal, and the fourth column is the number of citations of the article.

104
papers

1,554
citations

20
h-index

34
g-index

109
ext. papers

1,968
ext. citations

3.5
avg, IF

4.6
L-index

#	Paper	IF	Citations
104	Comparative pharmacokinetics and tissue distribution of primaquine enantiomers in mice.. <i>Malaria Journal</i> , 2022 , 21, 33	3.6	0
103	Analysis of docosanol using GC/MS: Method development, validation, and application to human skin permeation studies.. <i>Journal of Pharmaceutical Analysis</i> , 2022 , 12, 287-292	14	1
102	Relative safety and quality of various dietary supplement products U.S. Service Members ask about.. <i>Clinical Toxicology</i> , 2022 , 1-8	2.9	0
101	Assessment of Herb-Drug Interaction Potential of Five Common Species of Licorice and Their Phytochemical Constituents.. <i>Journal of Dietary Supplements</i> , 2022 , 1-20	2.3	0
100	Simultaneous determination and characterization of flavonoids, sesquiterpene lactone, and other phenolics from <i>Centaurea benedicta</i> and dietary supplements using UHPLC-PDA-MS and LC-DAD-QToF.. <i>Journal of Pharmaceutical and Biomedical Analysis</i> , 2022 , 216, 114806	3.5	1
99	Comparative analysis of five <i>Salvia</i> species using LC-DAD-QToF.. <i>Journal of Pharmaceutical and Biomedical Analysis</i> , 2021 , 209, 114520	3.5	2
98	A Comprehensive Workflow for the Analysis of Bio-Macromolecular Supplements: Case Study of 20 Whey Protein Products. <i>Journal of Dietary Supplements</i> , 2021 , 1-19	2.3	1
97	Phenoxchromone and 4-hydroxyisoflavans from the roots of. <i>Natural Product Research</i> , 2021 , 1-8	2.3	0
96	Quantitative determination and characterization of polyphenols from <i>Cissus quadrangularis</i> L. and dietary supplements using UHPLC-PDA-MS, LC-QToF and HPTLC. <i>Journal of Pharmaceutical and Biomedical Analysis</i> , 2021 , 199, 114036	3.5	2
95	Chemical Profiling and Characterization of Anthraquinones from Two Bulbine Species and Dietary Supplements Using Liquid Chromatography-High Resolution Mass Spectrometry. <i>Journal of AOAC INTERNATIONAL</i> , 2021 , 104, 1394-1407	1.7	
94	Modulation of CYP3A4 and CYP2C9 activity by <i>Bulbine natalensis</i> and its constituents: An assessment of HDI risk of <i>B. natalensis</i> containing supplements. <i>Phytomedicine</i> , 2021 , 81, 153416	6.5	5
93	Five Unapproved Drugs Found in Cognitive Enhancement Supplements. <i>Neurology: Clinical Practice</i> , 2021 , 11, e303-e307	1.7	6
92	Comparative study and quality evaluation regarding morphology characters, volatile constituents, and triglycerides in seeds of five species used in traditional Chinese medicine. <i>Journal of Pharmaceutical and Biomedical Analysis</i> , 2021 , 194, 113801	3.5	2
91	Eupatorin 3F-glucopyranoside, a trimethoxyflavonoid glucoside from the aerial parts of. <i>Natural Product Research</i> , 2021 , 1-8	2.3	0
90	Ashwagandha as a cause for liver injury. <i>Liver International</i> , 2020 , 40, 2035-2036	7.9	1
89	Licochalcone L, an undescribed retrochalcone from roots. <i>Natural Product Research</i> , 2020 , 1-7	2.3	1
88	Quantification and Characterization of Phenolic Compounds from Northern Indian Propolis Extracts and Dietary Supplements. <i>Journal of AOAC INTERNATIONAL</i> , 2020 , 103, 1378-1393	1.7	3

87	A Public Health Issue: Dietary Supplements Promoted for Brain Health and Cognitive Performance. <i>Journal of Alternative and Complementary Medicine</i> , 2020 , 26, 265-272	2.4	13
86	Ashwagandha-induced liver injury: A case series from Iceland and the US Drug-Induced Liver Injury Network. <i>Liver International</i> , 2020 , 40, 825-829	7.9	22
85	The scoop on brain health dietary supplement products containing huperzine A. <i>Clinical Toxicology</i> , 2020 , 58, 991-996	2.9	6
84	Chemical profiling and characterization of phenolic acids, flavonoids, terpene glycosides from <i>Vangueria agrestis</i> using ultra-high-performance liquid chromatography/ion mobility quadrupole time-of-flight mass spectrometry and metabolomics approach. <i>Biomedical Chromatography</i> , 2020 , 34, e4840	1.7	3
83	Development and Validation of a UHPLC-PDA-MS Method for the Quantitative Analysis of Anthraquinones in <i>Bulbine natalensis</i> Extracts and Dietary Supplements. <i>Planta Medica</i> , 2020 , 86, 144-150	3.1	5
82	Identification of Antifungal Bisphosphocholines from Medicinal Species. <i>Journal of Natural Products</i> , 2020 , 83, 3207-3211	4.9	0
81	Possible Herb-Drug Interaction Risk of Some Nutritional and Beauty Supplements on Antiretroviral Therapy in HIV Patients. <i>Journal of Dietary Supplements</i> , 2020 , 1-16	2.3	2
80	Analysis of prenylflavonoids from aerial parts of <i>Epimedium grandiflorum</i> and dietary supplements using HPTLC, UHPLC-PDA and UHPLC-QToF along with chemometric tools to differentiate <i>Epimedium</i> species. <i>Journal of Pharmaceutical and Biomedical Analysis</i> , 2020 , 177, 112843	3.5	4
79	Characterization, Quantification and Quality Assessment of Avocado (Mill.) Oils. <i>Molecules</i> , 2020 , 25,	4.8	8
78	Liquid chromatography-quadrupole time of flight mass spectrometric method for targeted analysis of 111 nitrogen-based compounds in weight loss and ergogenic supplements. <i>Journal of Pharmaceutical and Biomedical Analysis</i> , 2019 , 174, 305-323	3.5	6
77	Melt-Cast Films Significantly Enhance Triamcinolone Acetonide Delivery to the Deeper Ocular Tissues. <i>Pharmaceutics</i> , 2019 , 11,	6.4	5
76	Structural Characterization of Cranberry Arabinoxyloglucan Oligosaccharides. <i>Journal of Natural Products</i> , 2019 , 82, 606-620	4.9	4
75	Quantitative determination and pharmacokinetic study of fusaricidin A in mice plasma and tissues using ultra-high performance liquid chromatography-tandem mass spectrometry. <i>Journal of Pharmaceutical and Biomedical Analysis</i> , 2019 , 170, 187-192	3.5	3
74	Severe and protracted cholestasis in 44 young men taking bodybuilding supplements: assessment of genetic, clinical and chemical risk factors. <i>Alimentary Pharmacology and Therapeutics</i> , 2019 , 49, 1195-1204	6.1	23
73	Decaffeinated Green Tea Extract Does Not Elicit Hepatotoxic Effects and Modulates the Gut Microbiome in Lean B6C3F ₁ Mice. <i>Nutrients</i> , 2019 , 11,	6.7	7
72	The power of hyphenated chromatography-Time of flight mass spectrometry for unequivocal identification of spirostanes in bodybuilding dietary supplements. <i>Journal of Pharmaceutical and Biomedical Analysis</i> , 2019 , 167, 74-82	3.5	8
71	The Chemical Characterization of <i>Eleutherococcus senticosus</i> and Ci-wu-jia Tea using UHPLC-UV-QTOF/MS. <i>International Journal of Molecular Sciences</i> , 2019 , 20,	6.3	14
70	Pharmacokinetics and Tissue Distribution of Aegeline after Oral Administration in Mice. <i>Planta Medica</i> , 2019 , 85, 491-495	3.1	3

69	Identification and Characterization of Key Chemical Constituents in Processed Using UHPLC-MS/MS and Chemometric Methods. <i>Journal of Analytical Methods in Chemistry</i> , 2019 , 2019, 4396201	2	8
68	Quantification of Phenolic Compounds from <i>Fadogia agrestis</i> and Dietary Supplements using UHPLC-PDA-MS. <i>Planta Medica</i> , 2019 , 85, 145-153	3.1	2
67	Piper nigrum Oil - Determination of Selected Terpenes for Quality Evaluation. <i>Planta Medica</i> , 2019 , 85, 185-194	3.1	5
66	Identification of fusaricidins from the antifungal microbial strain <i>Paenibacillus</i> sp. MS2379 using ultra-high performance liquid chromatography coupled to quadrupole time-of-flight mass spectrometry. <i>Journal of Chromatography A</i> , 2019 , 1586, 91-100	4.5	4
65	Endocyclic double bond isomers and by-products from rebaudioside A and stevioside formed under acid conditions. <i>Phytochemistry Letters</i> , 2018 , 25, 163-170	1.9	6
64	Detection and quantification of phenethylamines in sports dietary supplements by NMR approach. <i>Journal of Pharmaceutical and Biomedical Analysis</i> , 2018 , 151, 347-355	3.5	19
63	Quantitative Determination of Δ^9 -THC, CBG, CBD, Their Acid Precursors and Five Other Neutral Cannabinoids by UHPLC-UV-MS. <i>Planta Medica</i> , 2018 , 84, 260-266	3.1	25
62	Application of GC/Q-ToF Combined with Advanced Data Mining and Chemometric Tools in the Characterization and Quality Control of Bay Leaves. <i>Planta Medica</i> , 2018 , 84, 1045-1054	3.1	3
61	The Red Yeast Rice story: How to manufacture a tall tale from nature. <i>European Journal of Preventive Cardiology</i> , 2018 , 25, 73-75	3.9	
60	Targeted and non-targeted analysis of annonaceous alkaloids and acetogenins from <i>Asimina</i> and <i>Annona</i> species using UHPLC-QToF-MS. <i>Journal of Pharmaceutical and Biomedical Analysis</i> , 2018 , 159, 548-566	3.5	11
59	Metabolism of primaquine in normal human volunteers: investigation of phase I and phase II metabolites from plasma and urine using ultra-high performance liquid chromatography-quadrupole time-of-flight mass spectrometry. <i>Malaria Journal</i> , 2018 , 17, 294	3.6	20
58	In Situ Gel of Triamcinolone Acetonide-Loaded Solid Lipid Nanoparticles for Improved Topical Ocular Delivery: Tear Kinetics and Ocular Disposition Studies. <i>Nanomaterials</i> , 2018 , 9,	5.4	55
57	Monoamine oxidases inhibitors from <i>Colvillea racemosa</i> : Isolation, biological evaluation, and computational study. <i>Fitoterapia</i> , 2018 , 124, 217-223	3.2	7
56	Tetra-glucopyranosyl Diterpene ent-Kaur-16-en-19-oic Acid and ent-13(S)-Hydroxyatisenoic Acid Derivatives from a Commercial Extract of <i>Stevia rebaudiana</i> (Bertoni) Bertoni. <i>Molecules</i> , 2018 , 23,	4.8	4
55	Impact of obesity on the toxicity of a multi-ingredient dietary supplement, OxyELITE Pro (New Formula), using the novel NZO/HILtJ obese mouse model: Physiological and mechanistic assessments. <i>Food and Chemical Toxicology</i> , 2018 , 122, 21-32	4.7	3
54	Updates to a C metabolic flux analysis model for evaluating energy metabolism in cultured cerebellar granule neurons from neonatal rats. <i>Neurochemistry International</i> , 2017 , 109, 54-67	4.4	5
53	Metabolic Profiling of Hoodia, Chamomile, Terminalia Species and Evaluation of Commercial Preparations Using Ultrahigh-Performance Liquid Chromatography Quadrupole-Time-of-Flight Mass Spectrometry. <i>Planta Medica</i> , 2017 , 83, 1297-1308	3.1	4
52	Separation of cucurbitane triterpenoids from bitter melon drinks and determination of partition coefficients using vortex-assisted dispersive liquid-phase microextraction followed by UHPLC analysis. <i>Journal of Separation Science</i> , 2017 , 40, 2238-2245	3.4	2

51	Rebaudiosides T and U, minor C-19 xylopyranosyl and arabinopyranosyl steviol glycoside derivatives from <i>Stevia rebaudiana</i> (Bertoni) Bertoni. <i>Phytochemistry</i> , 2017 , 135, 106-114	4	15
50	Quantitative Determination of Cannabinoids in Cannabis and Cannabis Products Using Ultra-High-Performance Supercritical Fluid Chromatography and Diode Array/Mass Spectrometric Detection. <i>Journal of Forensic Sciences</i> , 2017 , 62, 602-611	1.8	39
49	PXR mediated induction of CYP3A4, CYP1A2, and P-gp by <i>Mitragyna speciosa</i> and its alkaloids. <i>Phytotherapy Research</i> , 2017 , 31, 1935-1945	6.7	20
48	Variability in strength of red yeast rice supplements purchased from mainstream retailers. <i>European Journal of Preventive Cardiology</i> , 2017 , 24, 1431-1434	3.9	17
47	Pharmaceutical doses of the banned stimulant oxilofrine found in dietary supplements sold in the USA. <i>Drug Testing and Analysis</i> , 2017 , 9, 135-142	3.5	18
46	Assignment of sugar arrangement in branched steviol glycosides using electrospray ionization quadrupole time-of-flight tandem mass spectrometry. <i>Rapid Communications in Mass Spectrometry</i> , 2017 , 31, 315-324	2.2	7
45	<i>Eleutherococcus senticosus</i> (Araliaceae) Leaf Morpho-Anatomy, Essential Oil Composition, and Its Biological Activity Against <i>Aedes aegypti</i> (Diptera: Culicidae). <i>Journal of Medical Entomology</i> , 2017 , 54, 658-669	2.2	6
44	Safety assessment of the dietary supplement OxyELITE [®] Pro (New Formula) in inbred and outbred mouse strains. <i>Food and Chemical Toxicology</i> , 2017 , 109, 194-209	4.7	16
43	Concurrent supercritical fluid chromatographic analysis of terpene lactones and ginkgolic acids in <i>Ginkgo biloba</i> extracts and dietary supplements. <i>Analytical and Bioanalytical Chemistry</i> , 2016 , 408, 4649-4654	4.1	16
42	Differential kinetic profiles and metabolism of primaquine enantiomers by human hepatocytes. <i>Malaria Journal</i> , 2016 , 15, 224	3.6	13
41	(13)C metabolic flux analysis in neurons utilizing a model that accounts for hexose phosphate recycling within the pentose phosphate pathway. <i>Neurochemistry International</i> , 2016 , 93, 26-39	4.4	12
40	The anticancer potential of steroidal saponin, dioscin, isolated from wild yam (<i>Dioscorea villosa</i>) root extract in invasive human breast cancer cell line MDA-MB-231 in vitro. <i>Archives of Biochemistry and Biophysics</i> , 2016 , 591, 98-110	4.1	42
39	Inhibition of CYP3A4 and CYP1A2 by <i>Aegle marmelos</i> and its constituents. <i>Xenobiotica</i> , 2016 , 46, 117-252		14
38	Decarboxylation Study of Acidic Cannabinoids: A Novel Approach Using Ultra-High-Performance Supercritical Fluid Chromatography/Photodiode Array-Mass Spectrometry. <i>Cannabis and Cannabinoid Research</i> , 2016 , 1, 262-271	4.6	103
37	Tandem Mass Spectrometry for Structural Identification of Sesquiterpene Alkaloids from the Stems of <i>Dendrobium nobile</i> Using LC-QToF. <i>Planta Medica</i> , 2016 , 82, 662-70	3.1	15
36	Simultaneous Determination of Aegeline and Six Coumarins from Different Parts of the Plant <i>Aegle marmelos</i> Using UHPLC-PDA-MS and Chiral Separation of Aegeline Enantiomers Using HPLC-ToF-MS. <i>Planta Medica</i> , 2016 , 82, 580-8	3.1	11
35	Pathway-specific inhibition of primaquine metabolism by chloroquine/quinine. <i>Malaria Journal</i> , 2016 , 15, 466	3.6	14
34	Identification and quantification of vinpocetine and picamilon in dietary supplements sold in the United States. <i>Drug Testing and Analysis</i> , 2016 , 8, 334-43	3.5	15

33	Characterization and screening of pyrrolizidine alkaloids and N-oxides from botanicals and dietary supplements using UHPLC-high resolution mass spectrometry. <i>Food Chemistry</i> , 2015 , 178, 136-48	8.5	65
32	Enantioselective pharmacokinetics of primaquine in healthy human volunteers. <i>Drug Metabolism and Disposition</i> , 2015 , 43, 571-7	4	17
31	Fast Identification of 1,3-Dimethylamylamine Using Direct Analysis in Real Time-QToF-MS. <i>Journal of AOAC INTERNATIONAL</i> , 2015 , 98, 757-759	1.7	4
30	Authentication of true cinnamon (Cinnamon verum) utilising direct analysis in real time (DART)-QToF-MS. <i>Food Additives and Contaminants - Part A Chemistry, Analysis, Control, Exposure and Risk Assessment</i> , 2015 , 32, 1-8	3.2	34
29	Methylhexanamine is not detectable in Pelargonium or Geranium species and their essential oils: A multi-centre investigation. <i>Drug Testing and Analysis</i> , 2015 , 7, 645-54	3.5	12
28	Studies on Pharmacokinetic Drug Interaction Potential of Vinpocetine. <i>Medicines (Basel, Switzerland)</i> , 2015 , 2, 93-105	4.1	8
27	Investigating sub-2 μ m particle stationary phase supercritical fluid chromatography coupled to mass spectrometry for chemical profiling of chamomile extracts. <i>Analytica Chimica Acta</i> , 2014 , 847, 61-72	6.6	27
26	An integrated approach utilising chemometrics and GC/MS for classification of chamomile flowers, essential oils and commercial products. <i>Food Chemistry</i> , 2014 , 152, 391-8	8.5	43
25	Assessment of total phenolic and flavonoid content, antioxidant properties, and yield of aeroponically and conventionally grown leafy vegetables and fruit crops: a comparative study. <i>Evidence-based Complementary and Alternative Medicine</i> , 2014 , 2014, 253875	2.3	140
24	Characterization of steroidal saponins from <i>Dioscorea villosa</i> and <i>D. cayenensis</i> using ultrahigh performance liquid chromatography/electrospray ionization quadrupole time-of-flight mass spectrometry. <i>Planta Medica</i> , 2014 , 80, 321-9	3.1	13
23	Evaluation of in vitro absorption, distribution, metabolism, and excretion (ADME) properties of mitragynine, 7-hydroxymitragynine, and mitraphylline. <i>Planta Medica</i> , 2014 , 80, 568-76	3.1	49
22	Quantitative determination of seven chemical constituents and chemo-type differentiation of chamomiles using high-performance thin-layer chromatography. <i>Journal of Separation Science</i> , 2014 , 37, 2797-804	3.4	14
21	Quantitative determination of phenolic compounds by UHPLC-UV-MS and use of partial least-square discriminant analysis to differentiate chemo-types of Chamomile/Chrysanthemum flower heads. <i>Journal of Pharmaceutical and Biomedical Analysis</i> , 2014 , 88, 278-88	3.5	40
20	Profiling primaquine metabolites in primary human hepatocytes using UHPLC-QTOF-MS with ^{13}C stable isotope labeling. <i>Journal of Mass Spectrometry</i> , 2013 , 48, 276-85	2.2	21
19	Simultaneous determination of sesquiterpenes and pyrrolizidine alkaloids from the rhizomes of <i>Petasites hybridus</i> (L.) G.M. et Sch. and dietary supplements using UPLC-UV and HPLC-TOF-MS methods. <i>Journal of Pharmaceutical and Biomedical Analysis</i> , 2012 , 70, 53-63	3.5	50
18	Analytical methods for determination of magnoflorine and saponins from roots of <i>Caulophyllum thalictroides</i> (L.) Michx. using UPLC, HPLC and HPTLC. <i>Journal of Pharmaceutical and Biomedical Analysis</i> , 2011 , 56, 895-903	3.5	33
17	Analysis of primaquine and its metabolite carboxyprimaquine in biological samples: enantiomeric separation, method validation and quantification. <i>Biomedical Chromatography</i> , 2011 , 25, 1010-7	1.7	16
16	Rapid analysis of lignans from leaves of <i>Podophyllum peltatum</i> L. samples using UPLC-UV-MS. <i>Biomedical Chromatography</i> , 2011 , 25, 1230-6	1.7	9

15	Quantitative determination of pregnanes from aerial parts of <i>Caralluma</i> species using HPLC-UV and identification by LC-ESI-TOF. <i>Journal of AOAC INTERNATIONAL</i> , 2011 , 94, 1383-90	1.7	2
14	Flavonol glycosides from the south African medicinal plant <i>Sutherlandia frutescens</i> . <i>Planta Medica</i> , 2010 , 76, 178-81	3.1	32
13	QUANTITATIVE DETERMINATION OF PHENOLIC ACIDS IN <i>LONICERA JAPONICA</i> THUNB. USING HIGH PERFORMANCE THIN LAYER CHROMATOGRAPHY. <i>Journal of Liquid Chromatography and Related Technologies</i> , 2010 , 34, 38-47	1.3	7
12	Quantitative determination of multiple elements in botanicals and dietary supplements using ICP-MS. <i>Journal of Agricultural and Food Chemistry</i> , 2010 , 58, 8887-94	5.7	42
11	Quantitative determination of flavonoids and cycloartanol glycosides from aerial parts of <i>Sutherlandia frutescens</i> (L.) R. BR. by using LC-UV/ELSD methods and confirmation by using LC-MS method. <i>Journal of Pharmaceutical and Biomedical Analysis</i> , 2010 , 52, 173-80	3.5	37
10	Comparison of LC-UV, LC-ELSD and LC-MS Methods for the Determination of Sesquiterpenoids in Various Species of <i>Artemisia</i> . <i>Chromatographia</i> , 2009 , 70, 797-803	2.1	10
9	Quantitative Determination of Flavonoids by Column High-Performance Liquid Chromatography with Mass Spectrometry and Ultraviolet Absorption Detection in <i>Artemisia afra</i> and Comparative Studies with Various Species of <i>Artemisia</i> Plants. <i>Journal of AOAC INTERNATIONAL</i> , 2009 , 92, 633-644	1.7	20
8	Quantitative determination of flavonoids by column high-performance liquid chromatography with mass spectrometry and ultraviolet absorption detection in <i>Artemisia afra</i> and comparative studies with various species of <i>Artemisia</i> plants. <i>Journal of AOAC INTERNATIONAL</i> , 2009 , 92, 633-44	1.7	8
7	Identification and structural characterization of steroidal glycosides in <i>Hoodia gordonii</i> by ion-trap tandem mass spectrometry and liquid chromatography coupled with electrospray ionization time-of-flight mass spectrometry. <i>Rapid Communications in Mass Spectrometry</i> , 2008 , 22, 2587-96	2.2	15
6	Chemical fingerprint of <i>Hoodia</i> species, dietary supplements, and related genera by using HPTLC. <i>Journal of Separation Science</i> , 2008 , 31, 3959-64	3.4	19
5	Simultaneous analysis of adrenergic amines and flavonoids in citrus peel jams and fruit juices by liquid chromatography: part 2. <i>Journal of AOAC INTERNATIONAL</i> , 2007 , 90, 633-40	1.7	2
4	Chemical fingerprinting of <i>Hoodia</i> species and related genera: chemical analysis of oxypregnane glycosides using high-performance liquid chromatography with UV detection in <i>Hoodia gordonii</i> . <i>Journal of AOAC INTERNATIONAL</i> , 2007 , 90, 1526-31	1.7	6
3	Simultaneous identification and quantification of anthraquinones, polydatin, and resveratrol in <i>Polygonum multiflorum</i> , various <i>Polygonum</i> species, and dietary supplements by liquid chromatography and microscopic study of <i>Polygonum</i> species. <i>Journal of AOAC INTERNATIONAL</i> , 2007 , 90, 1532-8	1.7	9
2	Simultaneous quantification of adrenergic amines and flavonoids in <i>C. aurantium</i> , various <i>Citrus</i> species, and dietary supplements by liquid chromatography. <i>Journal of AOAC INTERNATIONAL</i> , 2005 , 88, 1593-606	1.7	10
1	Analysis of Crocetins and Safranal Variations in Saffron (<i>Crocus sativus</i>) Stigma Samples and Dietary Supplements Using HPLC/UHPLC-PDA-MS: Chemical Profiling and Chemometric Analysis Using LC-QToF. <i>Food Analytical Methods</i> , 1	3.4	1