

KAVAKA 51: 49-58 (2018)

The Genus *Agaricus* (*Agaricaceae*, *Agaricales*) from India- A Check List

¹Munruchi Kaur Saini, Harwinder Kaur² and Nazir Ahmad Malik³

^{1,3}Department of Botany, Punjabi University, Patiala

²Akal University Talwandi Sabo, Bathinda (Punjab)

¹Corresponding author Email: munruchi@gmail.com

(Submitted on August 5, 2018 ; Accepted on December 25, 2018)

ABSTRACT

The present paper presents a checklist of the species of genus *Agaricus* L.: Fr. from different regions of India known till date. In all, 126 taxa of this genus are documented from India as per latest literature and published reports.

Key words: *Agaricus*, checklist, distribution, India

INTRODUCTION

The Genus *Agaricus* L.:Fr is reported to have been derived from *Agarica* of Sarmatica, a district in Russia (Donk, 1962). It belongs to Family *Agaricaceae* Chevall and is characterized by umbrella shaped carpophores with furfuraceous to scaly pileus surface, free dark colored lamellae, annulate stipe and purple brown to coca brown dark colored spores without any gerpore. The carpophores are agaricoid to pluteoid in habit with bivalozngrocarpous-isocarpous to hymenocarpous development. This genus is cosmopolitan in distribution and grows in varying habitat. Owing to its diverse phytogeography and varied climate Indian subcontinent offers favorable growth conditions for the growth of mushrooms especially, during the monsoon season. Although the exploratory work on the mushroom mycobiota began quite early towards the end of the 18th Century with Berkeley (1856) being the pioneer in this regard. Since then number of investigators from different parts of India have been exploring to investigate the mushroom biota. Some such investigators who have added to our present knowledge of genus *Agaricus* are Hennings (1900, 1901) and Singh and Mehrotra (1974) from Uttar Pradesh, Masee (1912) from Calcutta, Saini *et al.* (1991,1992,1997) and Atri *et al.* (1991, 1992, 2001) from Punjab, Devi (1995) and Farook *et al.* (2013) from Kerela, Banerjee (1947) from Calcutta, West Bengal, Pandotra (1966) from Jammu and Kashmir, Trivedi (1972) and Patil *et al.* (1995) from Maharashtra, Sathe and Rahalkar (1975) and Sathe and Sasangan (1977) from South West India, Watling and Gregory (1980) and Abraham (1991) from Kashmir, Dhancholia and Sinha (1988) from Orissa, Manoharachary and Vijay Gopal (1991) from Andhra Pradesh, and Lakhanpal (1995) from North West Himalayas. Although there have been efforts to make a consolidated list of agarics from different parts of the country by some investigators including Natarajan (1995), Natarajan *et al.* (2005), Farook *et al.* (2013), Senthilarsu (2014), Upadhyay *et al.* (2017), however the list of *Agaricus* species so far reported from India in these documents still remains incomplete. The 'Dictionary of Fungi' (2008) and the MycoBank has been followed for the nomenclature of presently listed taxa of the genus *Agaricus* in this check list. The name of taxa and author citations as documented in the presently prepared list are given as per MycoBank (www.mycobank.org) record. In this paper attempt has been made to document the validly published

species and to remove those which are illegitimate or invalidly published for one reason or the other. In the list in all 126 taxa has been listed. These are arranged in alphabetic order and information about the locality, and habitat of respective taxon has also been provided.

INDIAN CHECK LIST OF GENUS *AGARICUS*:

Genus *Agaricus* L.: Fr., *Species Plantarum*: 1171, 1753.

Type species: *Agaricus campestris* L., *Species Plantarum*: 1173, 1753.

1. ***Agaricus abruptibulbus*** Peck, *Bull. New York State Mus.* **94**: 36, 1905.
South West India: Sathe and Rahalkar (1976).
Kashmir: Abraham (1991).
Punjab and Uttar Pradesh: Growing on pasture land in small groups and on humicolous soil (Gupta *et al.*, 2008a).
2. ***Agaricus abruptibulbus* var. *nullicystidiatus*** M. Kaur & H. Kaur, *World Jour. of Pharm. and Pharm.Science* **5**(7): 1525, 2016.
Punjab: Scattered on wet sandy soil along roadside (Kaur *et al.*, 2016a)
3. ***A. aestivalis* (Moeller) Pilát**, *Acta Mus. Nat. Prague* **7 B**(1) 25: 1951.
Punjab: Among *Cynodon dactylon* and below *Clerodendron inerme* and near *Bougainvillea glabra* hedge on grassy soil, scattered on grassy soil under *Eucalyptus* tree (Saini *et al.*, 1991; Atri *et al.*, 2001).
4. ***A. agrocyboides*** Heinem. et Gooss., *Bull. Bot. Jard. Bot. Etat. Brux.* **26**: 39, 1956.
Punjab: In groups on humicolous soil under *Cassia fistula* and *Tamarix aphylla* (Atri *et al.*, 2001).
Himachal Pradesh: Small groups under angiospermic woods along the road side (Gupta *et al.* 2008a).
5. ***A. alachuanus*** Murrill *J. Elisha Mitchell Sci. Soc.* **54**:140, 1938.
Punjab: Gregarious under *Polyalthia longifolia* and

- in open grassland (Saini *et al.*, 1991).
6. *A. alphitochrous* Berk. & Br., *Journ. Linn. Soc. Bot.* **11**: 511, 1871.
Punjab: Scattered to gregarious on grassy and humicolous soil and on plant debris under *Dalbergia sissoo* tree, and on decaying plant leaves and sticks under *Butea monosperma* tree or *Mangifera indica* (Atri *et al.*, 2001).
 7. *A. altipes* (Moeller) Pilát, *Acta Mus. Nat. Prague* **7 B**(1): 12 & 24, 1951.
Punjab: Growing solitary in soil (Saini *et al.*, 1991).
 8. *A. andrewii* Freeman A.E.H., *Mycotaxon*, **8** (1): 60, 1979.
Orissa: Dhancholia and Sinha (1988).
Punjab: Faridkot, solitary on humicolous soil (Kaur *et al.*, 2017).
 9. *A. annae* Pilát, *Acta. Mus. Nat. Prague* **7**(1): 73, 1951.
Kerala: Calicut University Campus, solitary and scattered on ground (Vrinda and Leelavathy, 1996).
 10. *A. argyropotamicus* Speg., *Syll. Fung.* **16**: 118, 1902.
Maharashtra: Dhancholia and Bahukhandi (1988).
Uttar Pradesh: Garhwal (Dhancholia and Bahukhandi, 1991).
 11. *A. arvensis* Schaeffer, *Fung. Bavar. Palat. nasc.* **4** (73): 310-311, 1774.
Central India: Solitary to scattered and in fairy rings in grazing lands (Karwa and Rai, 2010).
Kerala: Solitary to scattered under tree (Devi, 1995).
West Bengal: Banerjee (1947).
 12. *A. augustus* Fr., *Epicr.*: 212, 1938.
Himachal Pradesh: Growing on humus rich soil and on decaying leaf litter in mixed forests dominated by *Quercus incana* (Kumar and Lakhanpal, 1993).
Kerala: Solitary or scattered (Devi, 1995).
 13. *A. badius* Schaeff., *Fungorum qui in Bavaria et Palatinatu circa Ratisbonam nascuntur Icones* **4**: 63, t. 245, 1774.
Punjab: Patiala, solitary to scattered on humicolous soil among grasses (Saini *et al.*, 1997).
 14. *A. badius* var. *macrosporus* Saini, S. S., Atri, N. S. and Gupta, A. K. *Mushroom Research* **6** (2): 53-58.
Punjab: Solitary to scattered on humicolous soil among grasses, under angiospermic trees during early July to early August (Saini *et al.*, 1997).
 15. *A. bambusicola* Heinem., *Bull. Jard. Bot. Etat. Brux.* **26**: 104, 1956.
Karnataka: Coorg, Koynadu, growing solitary on ground (Natarajan, 1995; Natarajan and Purushothama, 1994).
 16. *A. bambusophilus* Heinem., *Kew Bull.* **15**: 244, 1961.
Karnataka: Coorg, in groups on ground (Natarajan, 1995; Natarajan and Purushothama, 1994).
Punjab: In groups or caespitose clusters on humicolous soil under *Dalbergia sissoo* (Atri *et al.*, 2001).
 17. *A. basianulosus* Paracer & Chahal, *Mycopathologia et Mycologia Applicata*, **18** (4): 270 1963.
Punjab: Ludhiana (Paracer and Chahal, 1962).
 18. *A. benesii* (Pilát) Pilát, *Acta Musei Nationalis Pragae* **7B**(1): 56, 1951.
Kerala: Thiruvananthapuram (Vrinda *et al.* 1997a; Pradeep and Vrinda, 2007 as *A. squamuliferus*).
 19. *A. bernardi* Quél., *Clavis synoptica Hymenomycetum Europaeorum*: 89, 1878.
Punjab: Scattered in caespitose clusters, forming a fairy ring among grasses around the heap of dung manure (Kaur *et al.*, 2016b as *A. bernardii*).
 20. *A. bisporus* (J.E. Lange) Imbach, *Mitteilungen der Naturforschenden Gesellschaft Luzern* **15**: 15, 1946.
Punjab: Ludhiana (Garcha, 1980).
Jammu and Kashmir: Abraham (1991); Sathe and Rahalkar (1976).
 21. *A. bitorquis* (Quél) Sacc., *Sylloge Fungorum* **5**: 998, 1987.
Kerala: Western Ghats, Pradeep and Vrinda (2007).
 22. *A. blazei* Murrill W.A., *Quart. J. Florida Acad. Sci.* **8**(2): 193, 1945.
Punjab: Mohali, scattered on humicolous soil (Kaur *et al.*, 2017).
 23. *A. bolorhizus* Berk. & Broome, *J. Linn. Soc. Bot.* **11**: 549, 1871.
Punjab: Groups forming a fairy ring on humicolous soil around the heap of mixed dung (Kaur *et al.*, 2017).
 24. *A. bresadolanus* Bohus, *Annal. Hist.-Natu. Mus. Nat. Hung.* **61**: 154, 1969.
Maharashtra: Poona, (Patil *et al.*, 1995).
 25. *A. brunneolus* (Lange) Pilát *Acta. Mus. Nat. Prague* **7 B**(1): 10, 1951.
Punjab: Patiala, scattered on soil under *Dalbergia sissoo* and *Leucaenia glauca* (Atri *et al.*, 2001).
 26. *A. burkillii* (Masse) Sacc. & Trotter, *Sylloge Fungorum* **23**: 302, 1925.

- West Bengal: On ground (Masse, 1912).
27. *A. brunnescens* Peck *Bull. Torrey Bot. Club* **27**: 16, 1900.
West Bengal: Pal and Mukherjee (1977).
Himachal Pradesh: Kasauli (Sehgal, 1978).
Jammu and Kashmir: Agha (1978); Kaul (1978).
Maharashtra: Poona (Sathe and Deshpande, 1980).
Punjab: Scattered on manure heaps along roadsides (Srivastava, 1978; Kannaiyan and Ramasamy, 1980; Saini and Atri, 1995).
28. *A. californicus* Peck., *Bull. Torrey Bot. Club*, **22**: 203, 1895.
Punjab: In groups on manured and grassy soil, forming a fairy ring under and around *Acacia nilotica* (Kaur *et al.*, 2017).
29. *A. campestris* L., *Species Plantarum*: 1173, 1753.
Jammu and Kashmir: Pang Range (Hennings, 1900); Pehlgam (Watling and Gregory, 1980).
West Bengal: Calcutta (Bose and Bose, 1940; Banerjee, 1947).
Bihar: Vasudeva (1960).
Maharashtra: Nagpur (Trivedi, 1972).
Uttar Pradesh: Allahabad (Singh and Mehrotra, 1974).
Punjab: Patiala, in groups along road on grassy soil; in small groups on grassy soil (Atri *et al.*, 2001).
30. *A. campestris* var. *equestris* (F.H. Møller) Pilát, *Acta Mus. Nat. Pr.*, **7B** (1): 14, 1951.
Punjab: Patiala, growing gregariously under *Bougainvillea glabra* (Atri *et al.*, 1991).
31. *A. campestris* var. *floccipes* (F.H. Møller) Pilát, *Acta Mus. Nat. Pragae*, **7B** (1): 14, 1951.
Punjab: Patiala, solitary on humicolous and sandy soil along road side near *Cassia fistula* (Kaur *et al.*, 2016b).
32. *A. campestris* var. *fuscopilosella* (F.H. Møller) Pilát, *Acta Mus. Nat. Pragae* **7B** (1): 14, 1951.
Punjab: Patiala, gregarious in grassy land *Dalbergia sissoo*, *Mangifera indica* and *Clerodendron inerme* (Atri *et al.*, 1991).
33. *A. campestris* var. *isabellinus* (F.H. Møller) Pilát, *Acta Mus. Nat. Pragae* **7B** (1): 14, 1951.
Punjab: Patiala, in humus soil under the hedge under *Clerodendron inerme* (Atri *et al.*, 1991).
34. *A. campestris* var. *pleurocystidiatus* M. Kaur & H. Kaur, *World Jour. of Phar. and Pharma. Sci.* **5** (7): 1522, 2016.
Punjab: Faridkot and Ferozepur, in groups on humicolous, grassy soil, Kaur *et al.* (2016a)
35. *A. caribaeus* Pegler in *Kew Bull. Addit. Ser.* **9**: 436 - 437, 1983.
Kerala: Kallar; TBGRI Campus, scattered on soil (Vrinda *et al.*, 1999a).
36. *A. carminescens* Heinem. & Gooss., *Bull. Jard. Bot. Etat. Brux.* **26**: 87, 1956.
Kerala: Calicut University Campus, scattered among grass (Vrinda and Leelavathy, 1996).
37. *A. carolii* Pilát, *Acta Mus. Nat. Pragae*, **7B** (1): 130, 1951.
[Published as *A. caroli* by Atri *et al.*, 2001]
Punjab: Patiala, among grasses on humicolous soil (Atri *et al.*, 2001).
38. *A. cheilotulus* Heinem., *Bull. Jard. Bot. Nat. Belg.* **60** (3-4): 346, 1990.
Uttar Pradesh: Nainital, in small scattered groups on humic soil under conifers in the mixed forest of *Quercus* and *Cedrus* (Gupta *et al.*, 2008a).
39. *A. comtulus* Fr. *Epicr.* 215, 1836.
Punjab: Patiala, in small groups *Syzygium cumini* (Atri *et al.*, 1992).
40. *A. crocopeplus* Berk. & Br., *Bot. Jour. of the Linn. Soci.* **11**: 546, 1871.
Meghalaya: East khasi Hills, solitary and in groups (Verma *et al.*, 1995).
41. *A. cupreobrunneus* (Jul. Schäff. & Steer ex F.H. Møller) Pilát, *Acta Mus. Nat. Pragae* **7B** (1): 14, 1951.
Maharashtra: Patil *et al.* (1995).
Punjab: Sangrur, scattered in a fairy ring on mixed cattle dung along with earthworm excreta (Amandeep *et al.*, 2015).
42. *A. cupreobrunneus* var. *microsporus* M. Kaur & B. Kaur, *World Jour. of Phar. and Pharm. Sci.* **5** (7): 1527, 2016.
Punjab: Solitary on humicolous soil (Kaur *et al.*, 2016a).
43. *A. cylindriceps* var. *cylindriceps* Murrill, *Llyodia* **7**: 323, 1944.
Punjab: In small groups under *Eucalyptus citridora* (Atri *et al.*, 1992).
Himachal Pradesh: Scattered among grasses under an angiospermic tree (Gupta *et al.*, 2008b)
44. *A. decoratus* (Moeller) Pilát *Lindgr.*: 199, 1845.
Punjab: Patiala, solitary below *Eucalyptus tereticornis* (Saini *et al.*, 1991).

45. *A. depauperatus* (F.H. Møller) Pilát, *Acta Musei Nationalis Pragae* **7B** (1): 18, 1951.
Punjab: Patiala, Baradari gardens, solitary on grassy soil under *Mangifera indica* (Atri *et al.*, 2001).
Kerala: Malappuram (Mohanani, 2011).
46. *A. diminutivus* Peck, *Ann. Rep. on the New York State Mus. Nat. Hist.* **54**: 184, 1902.
Orissa: Dhancholia and Sinha (1988).
Kerala: Neyyattinkara, growing scattered on the ground in monsoon (Devi 1995).
Punjab: Patiala, scattered in open grassland (Gupta *et al.*, 2008a).
47. *A. dulcidulus* Schulzer, *Icon. Sel. Hymenomyc. Hung.* **29**: 1874.
Punjab plains: gregarious to scattered in groups under hedges, angiospermic tree and among grasses on humicolous soil (Saini *et al.*, 1997; Gupta *et al.*, 2008a).
48. *A. edulis* Vill., *Prosp. Hist. Pl. Dauphiné*: 54, 1779.
Punjab: Patiala, gregarious on loamy soil and growing solitary on clay soil along roadside (Saini *et al.*, 1992).
49. *A. endoxanthus* Berk. & Br. in *Jour. Linn. Soc. Bot.* **11**: 548, 1871.
Kerala: TBGRI Campus, solitary or scattered on soil (Vrinda *et al.*, 1999a).
50. *A. essettei* Bon, *Documents Mycologiques* **13** (49): 56, 1983.
Maharashtra: Poona (Patil *et al.*, 1995).
51. *A. fiardii* Pegler, *Kew Bull. Additional Series* **9**: 447, 1983.
Kerala: Trissur and Malappuram (Mohanani, 2011).
52. *A. flavistipus* Atri, M. Kaur and A. Kaur in *Kavaka* **42**: 22, 2014.
Punjab: Faridkot, solitary on buffalo dung (Kaur *et al.*, 2014).
53. *A. fuscofibrillosus* (Moeller) Pilát, *Acta. Mus. Nat. Pragae* **7B** (1): 7 & 19, 1951.
Punjab: Patiala, gregariously in lawn; gregariously under *Clerodendron inerme* (Saini *et al.*, 1991).
54. *A. fuscovelatus* Kerrigan R.W., *Mycotaxon* **22** (2): 424, 1985.
Punjab: Scattered on humicolous and grassy soil near *Morus alba* (Kaur *et al.*, 2017).
55. *A. fulviceps* Berk., *Hooker's Journal of Botany and Kew Garden Miscellany* **6**: 130, 1856.
Sikkim: On ground (Berkeley, 1856).
56. *A. griseorimosus* Pegler, *Kew Bulletin Additional Series* **9**: 435, 1983.
57. *A. haemorrhoidarius* Schulzer, *Kalchbrenner C. Icon. Sel. Hymenom. Hung.* **2**: 29, 1874.
Punjab: Gregariously in lawn under hedge of *Clerodendrum inerme*; growing in caespitose clusters among grasses on humicolous soil; Gurdaspur, growing gregariously among grasses (Saini *et al.*, 1997).
Himachal Pradesh: Gregariously on pasture land (Saini *et al.*, 1997).
58. *A. halophilus* Peck, *Bull. New York State Mus.* **94**: 36, 1905.
Punjab: Mohali, scattered on mixed cattle dung heap; Sangrur, growing in groups on buffalo dung (Amandeep *et al.*, 2015).
59. *A. heinemanniensis* K. Natarajan & Purush., *Kavaka* **47**: 22-23, 1996.
Karnataka: Sullia, in group on ground (Natarajan, 1995; Natarajan and Purusothama, 1994).
60. *A. hemilasius* Berk. & Br. in *Linn. Soc., Bot.* **11**: 547, 1871.
Kerala: Calicut University Campus, scattered on ground (Vrinda and Leelavathy, 1996).
61. *A. hondensis* Murrill, *Mycologia* **4** (6): 296, 1912.
Punjab: Ludhiana, solitary on humicolous soil. Patiala, Botanical garden, Punjabi University, scattered on leaf litter along roadside (Kaur *et al.*, 2016b).
62. *A. impudicus* Fr., *Hymenomycetes Europaei*: 471, 1874.
Maharashtra: Poona (Patil *et al.*, 1995).
63. *A. iodolens* Heinem. & Gooss.-Font., *Bulletin du Jardin Botanique National de Belgique* **26** (1): 55, 1956.
Kerala: Trivandrum, caespitose or scattered on the ground (Devi, 1995).
64. *A. johnstonii* Murr. *Mycologia* **10**: 75, 1918.
Kerala: TBGRI campus, scattered in pairs in a lawn (Vrinda *et al.*, 1997b).
65. *A. lalage* Berk., *Revisio generum plantarum* **3**: 480, 1898.
New Delhi: IARI, on ground among grasses (Shankar, 1994).
66. *A. langei* (F.H. Møller) F.H. Møller, *Freisia* **4** (1-2): 28, 1950.
Kerala: Devi (1995).
Poona: Patil *et al.* (1995).
67. *A. lanipes* (F.H. Møller & Jul. Schäff.) Singer, *Lilloa*

- 22: 432, 1951.
Maharashtra: Poona (Patil *et al.*, 1995).
68. *A. lanipes* var. *macrosporus* Saini, Atri & A. K. Gupta in *Geobios new Reports*, **11**: 110, 1992.
Punjab: Patiala, gregarious in open grassland (Saini *et al.*, 1992).
69. *A. latipes* Berk., *Hooker's Journal of Botany and Kew Garden Miscellany* **4**: 131, 1852.
Khasi hills: Berkeley (1856).
70. *A. lasiophrys* Berk. & Broome, *Botanical Journal of the Linnean Society* **11**: 547, 1871.
Punjab: Chandigarh, (Rawla *et al.*, 1982).
71. *A. luteomaculatus* (Møller) Møller, *Freisia*, **4**: 204, 1952.
Punjab: Patiala, Punjabi University campus, growing solitary among grasses (Gupta *et al.*, 2008b).
72. *A. macrosporus* (F.H. Møller & Jul. Schäff.) Pilát, *Acta Musei Nationalis Pragae* **7B**(1): 78, 1951.
Jammu and Kashmir: Kashmir (Abraham, 1991).
73. *A. magniceps* Peck, *Bull. N. Y. State Mus.* **94**: 36, 1905.
Punjab: Patiala, gregariously on soil *Thespesia populnea* tree; in groups on humicolous soil under *Prosopis juliflora* and *Eucalyptus* tree; gregariously on humicolous soil under *Acacia nilotica* (Atri *et al.*, 2001).
74. *A. meleagris* Schaeff. *Zeitschr. F. Pilzk.* **4**: 28, 1925.
Punjab: Patiala, Punjabi University, solitary on soil under *Syzygium cumini*, *Dalbergia lanceolaria*, *D. latifolia* and *Terminalia* species (Atri *et al.*, 1992); Patiala, Punjabi University Campus, scattered on humicolous soil (Atri *et al.*, 2001).
75. *A. meleagris* var. *meleagris* J. Schaeffer, *Zeitschr. f. Pilzk.* **4**: 28, 1925.
Punjab: Patiala, in small groups on soil under *Syzygium cumini*, *Dalbergia lanceolaria* (Atri *et al.*, 1992).
Uttar Pradesh: Dehradun, solitary on pasture land (Atri *et al.*, 1992).
Himachal Pradesh: Dunera, in small scattered groups (Atri *et al.*, 1992).
76. *A. meleagris* var. *obscuratus* (Maire) Heinem., *Bull. Soc. Mycol. Fr.*, **71**(3): 397, 1965.
Punjab: Mohali, gregariously on humicolous soil (Kaur *et al.*, 2017).
77. *A. micromegathus* Peck, *Ann. Rep. N. Y. State Mus.* **94**: 36, 1905.
South West India: (Sathe and Rahalkar, 1978);
Punjab: Patiala, scattered among grasses, (Gupta *et al.*, 2008b)
78. *A. nigrovinosus* Pegler, *Kew Bulletin Additional Series* **6**: 327, 1977.
New Delhi: IARI, on ground (Shankar, 1994).
79. *A. nivescens* (Moeller) Moeller, *Friesia* **4** : 204, 1952.
New Delhi: IARI, on ground among dead twigs (Shankar, 1994).
Karnataka: Coorg, in group on ground (Natarajan, 1995; Natarajan and Purushothama 1994).
Kerala: TBGRI campus, scattered in litter decomposed soil (Vrinda *et al.*, 1997a).
80. *A. ochraceosquamulosus* Heinem., *Kew Bulletin* **15** (2): 243, 1961.
Kerala: Wayanad, (Mohanan, 2011).
81. *A. osecanus* Pilát, *Acta Mus. Nat. Pragae* **7B** (1): 133, 1951.
Kerala: Vrinda *et al.* 1997b; Pradeep and Vrinda, 2007 {as *Agaricus nivescens*}.
82. *A. parvisilvaticus* Heinem. *Bull. Jard. Bot. Brux.* **32**:156, 1962.
Kerala: Calicut University Campus, scattered on ground (Vrinda and Leelavathy, 1996)
83. *A. parvitigrinus* Guinb. & Callac, *Mycologia* **97** (2): 419, 2005.
Punjab: Patiala, scattered caespitose clusters on leaf litter, mixed with manured soil (Kaur *et al.*, 2017).
84. *A. pattersonae* Peck, *Bulletin of the Torrey Botanical Club* **34**: 347, 1907.
Maharashtra: Poona (Patil *et al.*, 1995).
85. *A. patialensis* M. Kaur & H. Kaur, *Wor. Jour. of Pharm. and Pharm. Sci.* **5** (7): 1521, 2016.
Punjab: Solitary, scattered in humicolous and grassy soil (Kaur *et al.*, 2016a).
86. *A. phaeolepidotus* var. *macrocarpa* Gupta, A.K., Atri, N.S., Kaur, M. & Saini, S.S. *Indian J. Mush.* **26** (1&2): 22 - 30.
Himachal Pradesh: Chail, scattered on humic soil in *Cedrus deodara* forest, (Gupta *et al.*, 2008b).
87. *A. placomyces* Peck, *Ann. Report on the New York St. Mus. of Nat. Hist.* **29**: 40, 1878.
Southwestern India: Sathe and Rahalkar (1978).
Himachal Pradesh: Solan (Sharma *et al.*, 1978; Lakhnupal, 1986).
Punjab: Scattered among grasses under *Eucalyptus* plantation (Saini *et al.*, 1991).

88. *A. placomyces* var. *microsporus* A.H. Sm., *Papers of the Michigan Academy of Sciences* **25**: 125, 1940.
Punjab: Patiala on moist soil among grasses; Himachal Pradesh: in small groups among grasses (Gupta *et al.*, 2008a).
89. *A. porphyrocephalus* F.H. Møller, *Friesia* **4** (3): 204, 1952.
Punjab: In groups forming fairy ring around dung manure heap, along roadside (Kaur *et al.*, 2017).
90. *A. porphyrocephalus* var. *cheilocystidiatus* M. Kaur & H. Kaur, *Worl. Jour. Of Pharm. and Pharma. Sci.* **5** (7): 1524, 2016.
Punjab: Bathinda, in groups on wet leaf litter and humicolous soil along roadside (Kaur *et al.*, 2016a).
91. *A. praeclaresquamosus* Freeman A.E.H., *Mycotaxon* **8** (1): 90, 1979.
Himachal Pradesh: Narkanda, , scattered on humicolous soil under *Quercus incana* (Gupta *et al.*, 2008a).
92. *A. praeclaresquamosus* var. *terricolor* (F.H. Møller) Bon & Cappelli, *Documents Mycologiques* **13** (52): 16, 1983.
Maharashtra: Poona (Patil *et al.*, 1995).
93. *A. pratensis* Schaeff., *Fung. Bavar. Palat. Nasc.* **4**: 42, 1774.
Punjab: growing on soil along the roadside, growing in groups on mixed cattle dung (Saini *et al.*, 1991).
Assam: Guwahati (Bhattacharya *et al.*, 1952).
94. *A. projectellus* Murrill, *Mycologia* **33**: 497, 1941.
Uttar Pradesh: Garhwal, in groups on soil and among grass (Dhancholia and Bahukhandi, 1991).
95. *A. pseudopratensis* (Bohus) Wasser, *Ukrai. Bot. Zhur.* **250**, 1976.
Maharashtra: Poona (Patil *et al.*, 1995).
96. *A. pseudopratensis* var. *niveus* Bohus, *Annales Historico-Natureles Musei Nationalis Hungarici* **72**: 94, 1980.
Maharashtra: Poona (Patil *et al.*, 1995).
97. *A. rhoadsii* Murrill in *Bull. Torrey Bot. Club.* **66**: 29, 1939.
Punjab: Patiala, solitary on humus soil under hedge of *Clerodendron inerme* (Saini *et al.*, 1991).
98. *A. rodmanii* Peck, *Annual Report on the New York State Museum of Natural History* **36**: 45, 1884.
South West India: Sathe and Rahalkar (1978).
99. *A. romagnesi* Wasser, *Ukrai. Bot. Zhur.* **34** (3): 305, 1977.
Maharashtra: Poona (Patil *et al.*, 1995).
100. *A. rubribrunnescens* Murrill, W.A., *Mycologia*, **14** (4): 216, 1922.
Punjab: Bathinda (211 m), growing in groups on humicolous, grassy soil along roadside (Kaur *et al.*, 2017).
101. *A. semotus* Fr., *Acta Mus. Nat. Pragae* **78** (1): 23, 99, 1951.
Punjab: Sangrur, scattered on open pasture (Gupta *et al.*, 2008b).
102. *A. sequoia* Kerrigan, *Mycotaxon* **22** (2), 420, 1985.
Punjab: Patiala, scattered on grassy soil under *Tecoma undulata* (Atri *et al.*, 2001).
Maharashtra: Pune (Patil *et al.*, 1995).
103. *A. silvaticus* Schaeff. ex Secr., *Mycog. Suisse* **I**: 98, (1883).
Meghalaya: Umroi (Verma *et al.*, 1995).
Sikkim: On ground (Berkeley, 1856).
104. *A. silvaticus* var. *rubribrunnescens* (Murrill) Heinem., *Sydowia* **30** (1-6): 7, 1978.
Punjab: Patiala, growing solitary on grassy soil (Saini *et al.*, 1993).
105. *A. silvaticus* var. *silvaticus* Schaeff. *Icon. Bav.* **4**: 62, 1774.
Himachal Pradesh: Narkanda, scattered on humicolous soil in *Abies* forest among *Onychium*, *Fragaria*, etc. (Saini *et al.*, 1997).
106. *A. silvaticus* var. *pallidus* (F.H. Møller) F.H. Møller, *Friesia*, **4** (3): 1952.
Punjab: Patiala, solitary on leaf litter and humicolous mixed soil, along roadside (Kaur *et al.*, 2017).
107. *A. silvicola* (Vittadini) Peck, *Ann. Rep. Reg. St. N.Y.* **23**: 97, 1872.
South West India: Sathe and Rahalkar (1978).
Himachal Pradesh and Uttar Pradesh: Atri *et al.* (2001).
Punjab: Gupta *et al.* (2008a).
Jammu and Kashmir: Rajouri (Anand *et al.*, 2014).
108. *A. simulans* Batsch, *Elenchus fungorum*: 85, 1783.
Kerala: Trissur (Mohan, 2011).
109. *A. solidipes* Peck, *Bull Torrey Bot Club* **31**: 180, 1904.
Uttar Pradesh: Garhwal, caespitose on soil (Dhancholia and Bahukhandi, 1991).
110. *A. spissicaulis* F.H. Møller, *Friesia* **4** (3): 203, 1950.
Punjab: Patiala, growing in groups in humicolous soil (Saini *et al.*, 1997).

111. *A. squamuliferus* Moeller, *Friesia* **4**: 21, 1950.
Kerala: Njekkad, scattered on ground (Vrinda *et al.* 1997b).
112. *A. squalidus* Lasch. *Linnaea* **3**: 380, 1828.
Calcutta: Banerjee (1947).
113. *A. stellatus-cuticus* Atri, M. Kaur & A. Kaur, *Kavaka* **42**: 20, 2014.
Punjab: Patiala, scattered on leaf litter and humicolous soil along roadside (Amandeep *et al.*, 2014)
114. *A. subalachuanus* Murrill, *Lloydia* **5**: 151, 1942.
Punjab: in small groups below *Acacia* species (Saini *et al.*, 1991).
115. *A. subedulis* Heinem., *Bulletin du Jardin Botanique National de Belgique* **26**(1): 22, 1956.
Maharashtra: Phaltan (Patil *et al.*, 1995).
116. *A. suboreades* Murrill, *Lloydia* **5**: 1520, 1942.
Punjab: Patiala, in small groups under *Eucalyptus citriodora*; Punjabi University Campus, growing solitary in grassy lawn (Atri *et al.*, 1992; Gupta *et al.*, 2008b).
117. *A. subrufescens* Peck, *Ann. Rep. on the New York Stat. Mus. of Nat. Hist.* **46**: 105, 1893.
Himachal Pradesh: Solan (Sharma *et al.*, 1978).
118. *A. subrutilescens* (Kauffman) Hotson and Stuntz, *Mycologia* **30**: 219, 1938.
Punjab: Ropar, gregarious in groups on humicolous soil near Shampur, growing solitary on humicolous soil (Kaur *et al.*, 2017).
119. *A. sulphureiceps* Murrill, *Quart. J. Florida Acad. Sci.* **8**: 195, 1945.
Punjab: Bahadurgarh, along road side under *Dalbergia* sp. (Saini *et al.*, 1991).
120. *A. torocephalus* Berk. & Br., *Jour. Linn. Soc. Bot.* **11**: 548, 1871.
Uttar Pradesh: Dehradun, solitary under Bamboo (Gupta *et al.*, 2008b).
121. *A. trisulphuratus* Berk., *Ann. Mag. Nat. Hist.* **386**, 1885.
Punjab: Patiala, in groups on humicolous soil among grasses (Saini *et al.*, 1991; Atri *et al.*, 2001).
122. *A. ustulatus* With., *A Bot. Arra. of all the veg. nat. gro. in Gre. Brit.* **1-2**: 759, 1776.
Karnataka: Sullia, solitary on ground (Natarajan 1995; Natarajan and Purushothama 1994).
123. *A. vaporarius* (Pers.) Imbach, *Mitt. Naturf. Ges. Luzern* **15**: 15, 1949.
Maharashtra: Poona (Patil *et al.*, 1995).
124. *A. variegatus* Pers., *Syns. meth. fung.* **391**, 1801.
Himachal Pradesh: Narkanda, on humicolous soil under *Picea*, *Abies* and *Quercus* (Saini *et al.*, 1997).
125. *A. volvatulus* Heinem. et Gooss., *Bull. Jard. Bot. Brux.* **25**: 61, 1955.
Kerala: TBGRI Campus, scattered on ground (Vrinda *et al.*, 1999b).
126. *A. xanthoderma* Genev., *Bull. de la Soci. Bota. de Fran.* **23**: 28, 1876.
Punjab: on the soil (Atri *et al.*, 1992; 2001; as *A. xanthodermus*); Sangrur, scattered on mixed cattle dung; Aahan Khaeri, scattered on mixed cattle dung (Amandeep *et al.*, 2015 as *A. xanthodermus*).

Excluded species:

So far in all 18 taxa of *Agaricus* stands excluded from the Indian records for various reasons. Three species have been shifted to other genera viz. *A. comosus* shifted to genus *Pholiota populnea*, *A. bulbillosus* shifted as Homonym of *Leucoagaricus bulbillosus* (MycoBank, 2018), *A. rimosus* shifted to genus *Inocybe* and its current name is *Inocybe rimosa*. *A. xanthodermus* has been excluded from the list of Indian record as it is an Orthographic variant and its current name is *A. xanthoderma* (MycoBank, 2018). *A. campester* has been merged with *A. campestris* (MycoBank, 2018), hence it also stands deleted from the list of Indian records. Senthilarsu (2014) recorded the publication of *A. concoloratus* Sathe & Sassangan, *A. endoxanthoides* Sathe & Sassangan, *A. pathakii* Sathe & Sasangan, *A. subglobosporus* Sathe & Sasangan, *A. sylvaticus* var. *minor* Sathe & Sasangan, *A. bhimashankarensis* Sathe & Sasangan, *A. campestris* var. *mahabaleshwariensis* Sathe & S.D. Deshp, *A. campestris* var. *poonensis* Sathe & Sasangan, *A. chinchwadense* Sathe & Sassangan, *A. khandalense* Sathe & Sassangan, *A. microsporus* Sathe & Sasangan, *A. pallidostipes* Sathe & Sasangan and *A. xanthodermus* var. *poonensis* Sathe & Sasangan in contravention to the available provisions of the Articles in the Code. There is no description and these are not validly published, hence all these names also stands deleted from the Indian records.

CONCLUSION

In the Dictionary of Fungi, Kirk, *et al* (2008) documented the occurrence of as many as 440 valid species of *Agaricus* from throughout the world. As per MycoBank record this number has gone up to 9888 taxa. From India after exclusion of the invalidly published species of the genus so far 126 taxa are known, however Upadhyay *et al.* (2017) documented the occurrence of only 84 taxa of this genus in the "Documentry of Agaricomycetous Mushrooms of India". Most part of the country still remains to be explored for documenting the *Agaricus* diversity in particular and mushroom diversity in general. There is a lot of scope in this regard to undertake exploratory investigations covering varying habitats in all nooks and corners of the country.

ACKNOWLEDGEMENTS

Authors are thankful to the department of Botany, Punjabi University, Patiala and UGC-BSR (India) for financial assistance.

REFERENCES

- Abraham, S.P. 1991. Kashmir fungal flora- An Overview. In: *Indian Mushrooms*, (Ed.: Nair, M.C.), Kerala Agricultural University, Velenikkara, pp. 13-24.
- Agha, Z. D. 1978. Review of mushroom growing in Jammu and Kashmir. *Indian Mush. Sci.* **1**: 49-54.
- Amandeep, K., Atri, N. S. and Kaur, M. 2014. New species of *Agaricus* (*Agaricaceae*, *Agaricales*) collected on dung from Punjab, India, *Kavaka* **42**: 20-24.
- Amandeep, K., Atri, N. S. and Kaur, M. 2015. Taxonomic study on the coprophilous mushrooms from Punjab, India: New records of family *Agaricaceae*. *Current Research in Environmental & Applied Mycology* **5** (1), 27-45.
- Anand, A. Mathur, A. and Chowdhary, P.N. 2014. First report on survey of macrofungal biodiversity in Rajouri, Distt. (J & K), India. *World Journal of Pharmacy and Pharmaceutical Sciences* **3**(12): 1385-1402.
- Atri, N. S., Kaur, A. and Saini, S. S. 2001. Mushroom flora of Patiala - The genus *Agaricus* L. ex. Fr. - *Indian J. Mush.* **19** (1&2): 1-9.
- Atri, N. S., Kaur, A., Saini, S. S. and Gupta, A. K. 1991. Systematic studies on *Agaricus campestris* (L.) Fr. *Geobios New Reports* **10**: 32-37.
- Atri, N. S., Saini, S. S. and Gupta, A. K. 1992. Fungi of Punjab-VI: Studies on genus *Agaricus* L.: Fr. *J. Indian Bot. Soc.* **71**: 119-121.
- Banerjee, S. N. 1947. Fungal flora of Calcutta and sub-urbs I. *Bull. Bot. Soc. Bengal.* **1**: 37-54.
- Berkeley, M.J. 1856. Decades of fungi. Decades XLI- XLIII. Indian fungi. *Hooker's Journal of Botany and Kew Garden Miscellany.* **6**:129-143.
- Bhattacharya, B., Dutta, A. and Baruah, H.K. 1952. Fungi of Assam. *J. Univ. Gouhati* **4**: 287-312.
- Bose, S. R. and Bose, A. B. 1940. An account of edible mushrooms of India. *Sci. and Cult.* **6**: 141-149.
- Devi, B. S. 1995. Mushroom flora of Kerala. In: *Advances in Horticulture* Vol. 13- *Mushrooms*, (Eds.: Chadha, K.L. and Sharma, S.R.). Malhotra Publishing House, New Delhi, pp. 277-316.
- Dhancholia, S. and Bahukhandi, D. K. 1991. New records of agarics from India. *Indian Journal of Mycology and Plant Pathology* **21**(3) 248 - 250.
- Dhancholia, S. and Sinha, M. P. 1988. Additional studies on Agarics of Orissa. *Geobios New Reports* **7**: 169-172.
- Donk, M. A. 1962. The generic name proposed for *Agaricaceae*. *Bieth. Zur. Nova Hedwigia* **5**: 1-320.
- Farook, V. A., Khan, S. S. and Manimohan, P. 2013. A checklist of agarics (gilled mushrooms) of Kerala State, India. *Mycosphere* **4**(1): 97131.
- Garcha, H.S. 1980. *Mushroom Growing*. Punjab Agriculture University Publication, Ludhiana.
- Gupta, A.K, Atri, N. S. and Kaur, M. 2008b. Studies on the genus *Agaricus* L.: Fr-V. The sub genus *Agaricus* section *Xanthodermatei* Sing. *Indian J. Mush.* **26** (1&2): 38 - 44.
- Gupta, A.K., Atri, N.S., Kaur, M. and Saini, S.S. 2008a. Studies on the genus *Agaricus* L.: Fr - IV. The sub genus *Agaricus* section *Arvensis* Konr. et. Maubl. from North West India. *Indian J. Mush.* **26** (1&2): 22 - 30.
- Hennings, P. 1900. Fungi Indiae Orientalis. *Hedwigia* **39**: 150-153.
- Hennings, P. 1901. Fungi Indiae Orientalis II. *Hedwigia* **40**: 323-342.
- Kannaiyan, S. and Ramasamy, K. 1980. *A Hand Book of Edible Mushrooms*. Today and Tomorrow's Printers and Publishers, New Delhi. pp. 104.
- Karwa, A. and Rai, M. K. 2010. Hitherto unreported *Agaricus* species of Central India. *Nusantra Bioscience* **2** (3): 141-145.
- Kaul, T. N. 1978. Mushroom cultivation and rural development. *Indian Mushroom Science* **1**: 113.
- Kaur, A., Atri, N. S. and Kaur, M. 2014. Two new species of *Agaricus* (*Agaricaceae*, *Agaricales*) collected on dung from Punjab, India. *Kavaka* **42**: 20-24.
- Kaur, H., Kaur, M. and Malik, N. A. 2017. New additions to the genus *Agaricus* (*Agaricaceae*, *Agaricales*) from Northwest India. *Kavaka* **48**(2): 84 - 94.
- Kaur, M., Kaur, H. and Malik, N. A. 2016a. Subgenus *Agaricus*: Three new records to India. *World Journal of Pharmacy and Pharmaceutical Science* **5** (4): 2205 - 2214.
- Kaur, M., Kaur, H. and Malik, N. A. 2016b. Identification and characterization of six new taxa of genus *Agaricus* L.:Fr. (*Agaricaceae* Chevall.) from India. *World Journal of Pharmacy and Pharmaceutical sciences* **5**(7):1518 - 1533.
- Kirk, P.M., Cannon, P.F., Minter, D.W. and Stalpers, J.A. 2008. Ainsworth Bisby's *Dictionary of Fungi*. 10th edition. CABI, Wallingford Oxon 0x10 8DE. UK. Pp. 1-771.
- Kumar, A. and Lakhanpal, T. N. 1993. New records of *Agaricaceae* from India. *Indian Phytopath.* **46** (4): 418.
- Lakhanpal, T.N. 1986. Hallucinogenic mushrooms In: *Souvenir of Mushrooms*, National Centre for Mushroom Research and Training, Solan.
- Lakhanpal, T.N. 1995. Mushroom Flora of North West

- Himalayas. In: *Advances in Horticulture Vol. 13- Mushrooms* (Eds.: Chadha, K.L. and Sharma, S.R.). Malhotra Publishing House, New Delhi, pp. 351-373.
- Manoharachary, C. and Vijay Gopal, K. 1991. Mycofloristics of *Agaricales* from Andhra Pradesh. In: *Indian mushrooms* (Ed.: Nair, M. C.). Kerala Agricultural University, Velenikkara, Trivendrum, pp 3-5.
- Massee, G. 1912. Fungi exotici - 13. *Kew Bull.* **13** : 253-255.
- Mohanan, C. 2011. *Macrofungi of Kerala*. KFRI Handbook No. 27, Kerala Forest Research
- Mycobank 2018. <http://www.mycobank.org/> Retrieved in June, 2018.
- Natarajan, K. 1995. Mushroom Flora of South India (except Kerala). In: *Advances in Horticulture Vol. 13: Mushrooms*, (Eds.: Chadha, K.L. and Sharma, S.R.). Malhotra Publishing House, New Delhi, pp. 387-397.
- Natarajan, K. and Purushothama, K. B. 1994. South Indian *Agaricales* XXIII. *Kavaka* **22** (23):47-51.
- Natarajan, K., Kumaresan, V. and Narayanan, K. 2005. A checklist of Indian Agarics and Boletes (1984-2002). *Kavaka* **33**: 61-128.
- Pal, A. and Mukherjee, S. K. 1977. Cultivation of white mushroom *Agaricus bisporus*. *Bulletin of the Botanical Society of Bengal* **31**: 43-45.
- Pandotra, V.R. 1966. Notes on fungi of Jammu and Kashmir-I. *Proc. Ind. Acad. Sci.* **54**: 68-73.
- Patil, B. D., Jadhav, S. W and Sathe, A.V. 1995. Mushroom flora of Maharashtra. In: *Advances in Horticulture Vol. 13- Mushrooms*, (Eds.: Chadha, K. L. and Sharma, S. R.). Malhotra Publishing House, New Delhi, pp. 317-328.
- Pracer, C.S. and Chahal, D.S. 1962. A new edible species of genus *Agaricus* in Punjab (India). *Mycopath. Mycol. Appl.* **18**:267-270
- Pradeep, C. K. and Vrinda, K. B. 2007. Some noteworthy agarics from Western Ghats of Kerala - *Journal of Mycopathological Research* **1**: 114.
- Rawla, G.S., Sarwal, B.M. and Arya, S. 1982. Agarics new to India I. *Nova Hedwigia*. **36**: 433-443.
- Saini, S. S., Atri, N. S. and Gupta, A. K. 1991. Additional studies on North-West Indian Agarics. In: *Indian Mushrooms*, (Eds.: Nair, M.C.). Kerala Agricultural University, Velenikkara, Trivendrum, India, pp. 7-12.
- Saini, S. S., Atri, N. S. and Gupta, A. K. 1992. *Agaricus lanipes* var. *macrosporus* var. nov. and *A. edulis* (Vitt.) Møll. and J. Schaeffer, A new record for India. *Geobios new Reports*. **11**: 109-112.
- Saini, S. S., Atri, N. S. and Gupta, A. K. 1993. Systematic studies on the genus *Agaricus* L.: Fr. Proc. 80th Indian Science Congress Part-III Goa, pp 26(abstr.).
- Saini, S. S., Atri, N. S. and Gupta, A. K. 1997. Studies on the genus *Agaricus* L.: Fr. the Subgenus *Agaricus* section *Sanguinolenti* Schaeff. et Moeller from North west India. *Mushroom Research* **6** (2): 53-58.
- Saini, S.S., and Atri, N.S. 1995. Mushroom flora of Punjab. In : *Advances in Horticulture Vol. 13 Mushrooms* (Eds.: Chadha, K.L. and Sharma, S.R.). Malhotra Publishing House, New Delhi, pp. 375-386.
- Sathe, A. V. and Deshpande, S. 1980. *Agaricales* (Mushrooms) of Maharashtra, MACS, Pune. *Monograph No.* **1**: 9-42.
- Sathe, A. V. and Rahalkar, S. R. 1975. *Agaricales* from South-West India-I. *Biovigyanam* **1**: 75-78.
- Sathe, A. V. and Rahalkar, S. R. 1976. *Agaricales* from South-West India-II - *Indian Journal Mushrooms* **2**: 77-80.
- Sathe, A. V. and Rahalkar, S. R. 1978. *Agaricales* from South-West India-III. In: *Indian Mushroom Science* (Eds.: Atal, C. K., Bhat, B. K. and Kaul, T.N.). Indo-American Literature House, USA.
- Sathe, A.V. and Sasangan, K. C. 1977. *Agaricales* from South West India-III. *Biovigyanam* **3**: 119-121.
- Sehgal, B. K. 1978. Mushroom cultivation at Kasauli, Himachal Pradesh. *Indian Mush. Sci.* **1**: 29-34.
- Shankar, M. 1994. *Agaricaceae* and *Bolbitiaceae* from India. *Indian Phytopath.* **47** (1): 113-114.
- Sharma, A. D., Jandaik, C. L., Munjal, R. L. and Seth, P. K. 1978. Some fleshy fungi from Himachal Pradesh - I. *Indian J. Mush.* **4**: 1-4.
- Singh, J. and Mehrotra, B. S. 1974. A survey of the gilled mushrooms in India. *Beih. Nova Hedwigia* **47**: 511-529.
- Srivastava, B. S. 1978. Marketing of white mushrooms. *Indian Mush. Sci.* **1**: 113-117.
- Senthilarasu, G. 2014. Diversity of agarics (gilled mushrooms) of Maharashtra, India. *Current Research in Environmental & Applied Mycology* **4** (1), 58-78.
- Trivedi, T. K. 1972. *Agaricales* of Nagpur-I. *The Botanique* **3**: 53-59.
- Upadhyay, R. C., Verma, B., Sood, S., Atri, N. S., Lakhanpal, T. N. and Sharma, V. P. 2017. *Documentary of Agaricomycetous mushrooms of India*. Jaya Publishing House, Delhi. pp.1-6.
- Vasudeva, R. S. 1960. *The Fungi of India* (Revised). I.C.A.R., New Delhi. p. 255.
- Verma, R. N., Singh, G.B. and Singh, M.S. 1995. Mushroom Flora of North Eastern Hills. In: *Advances in Horticulture Vol. 13- Mushrooms* (Eds.: Chadha, K. L. and Sharma, S. R.). Malhotra Publishing House, New Delhi, India, pp. 329-349.

- Vrinda, K. B., Pradeep, C. K., Mathew, S. and Abraham, T. K. 1997b. *Agaricales* from Western Ghats IV. *Journal of Mycology and Plant Pathology* **27** (3): 346-350.
- Vrinda, K. B., Pradeep, C. K., Mathew, S. and Abraham, T. K. 1997a. *Agaricales* from Western Ghats V. *Mushroom Research* **6** (1): 7-10.
- Vrinda, K. B., Pradeep, C. K., Mathew, S. and Abraham, T. K. 1999a. *Agaricales* from Western Ghats VII. *Mushroom Research* **8** (2): 9-12.
- Vrinda, K. B., Pradeep, C. K., Mathew, S. and Abraham, T. K. 1999b. *Agaricales* from Western Ghats VI. *Indian Phytopath.* **52** (2): 198-200.
- Vrinda, K.B. and Leelavathy, K. M. 1996. New records of *Agaricus* from India. *Journal of Economic and Taxonomic Botany* **20** (2): 345-349.
- Watling, R. and Gregory, N. M. 1980. Larger fungi from Kashmir. *Nova Hedwigia* **32**: 493-564.