**Ethnopharmacological Survey of Medicinal Plants Used for Managing Geriatric Diseases in Selected Regions of India**

**Abstract**

Geriatric diseases pose a significant global challenge. The overreliance on allopathic medications has led to the neglect of traditional medicinal plants and their potential side effects. The present study aims to improve the use of local medicinal plants in managing geriatric diseases. Authors have documented the traditional use of 30 local medicinal plants for treating health problems such as hypertension, diabetes, dementia, and osteoporosis. This study also explored the bioactive compounds responsible for their therapeutic properties. Furthermore, it highlights the importance of the sustainable use and conservation of local resources, promoting a holistic approach to the healthcare of older people.

**Keywords:** Medicinal plants, age-related ailments, hypertension, diabetes, dementia, osteoporosis, therapeutic applications, sustainable use

**Introduction**

The world's population is aging rapidly, with the number of people aged 65 and older projected to triple by 2050 (Noto, 2023). As people age, their bodily functions gradually decline, increasing their susceptibility to stress and age-related diseases. With increasing age, people often experience a decline in health conditions due to chronic illnesses and reduced physiological function. Chronic diseases and reduced bodily functions impact their ability to perform everyday tasks and maintain independence. Older adults are more likely to develop chronic conditions such as hypertension, diabetes, cancer, chronic lung diseases, heart diseases, stroke, arthritis, osteoporosis, and neurological disorders such as Alzheimer's disease, dementia, Parkinson's disease, and psychiatric conditions such as depression. These conditions can significantly hamper an individual's quality of life, making everyday activities more challenging and often requiring medical intervention and management (IIPS and UNPF, 2023). In contrast, active aging is about embracing a lifestyle that promotes physical, social, and mental well-being, enabling individuals to age healthily and maintain their quality of life (Annapuranam, 2025). Age-related ailments, such as hypertension, diabetes, dementia, and osteoporosis, are becoming increasingly prevalent, posing significant challenges to healthcare systems worldwide (Jaul and Barron, 2017). In recent years, researchers have extensively explored natural plant compounds (Al-Tohamy *et al*., 2018) for their potential to combat aging and age-related diseases. These compounds have shown promise as antioxidants, antiglycating agents, and neuroprotective agents. In particular, medicinal plants contain valuable components that may help prevent oxidative stress, inflammation, neurodegeneration, and glycation, which are key factors in the aging process. Studies have demonstrated that various plant metabolites can effectively regulate aging and delay the onset of age-related diseases (Babich *et al*., 2022a). Neurological problems such as dementia have also been common in older people in recent years and are expected to increase in the number of people affected by it in the years to come. Traditional medicine, which relies on the use of medicinal plants, has been used for centuries to treat various health conditions, including age-related ailments (Rizvi *et al*., 2022). Medicinal plants are a vital component of traditional medicine, offering a rich source of bioactive compounds with potential therapeutic applications (Wang *et al*., 2023). Many medicinal plants have been used for centuries in traditional healthcare practices to treat age-related ailments, with some plants demonstrating significant pharmacological activity (Babich *et al*., 2022b). Despite their potential, the use of medicinal plants in traditional medicine is often based on anecdotal evidence, and further research is needed to fully explore their therapeutic potential. This study aims to document the traditional use of medicinal plants for treating age-related ailments, highlighting their potential therapeutic applications and emphasizing the need for further research into their pharmacological properties.

**Methodology**

The present study employed a comprehensive literature search and analysis of existing studies on the traditional use of medicinal plants in treating geriatric diseases (Kumar, 2025). A systematic search was conducted using major databases, including PubMed, Scopus, Web of Science, and Google Scholar, with specific keywords. Data were extracted using a standardized form and analyzed using descriptive statistics and narrative synthesis (Jena *et al*., 2025). For photographs of medicinal plants, authors have carried out a field survey in Odisha, Himachal Pradesh, and Bihar. Some photographs are presented in the paper (Plate 1; Figure 2).

**Discussion**

The present study documented 30 local medicinal plants used in traditional medicine to treat various geriatric diseases. The results are presented in the table. The study revealed that the most commonly used plant parts are leaves (36%), followed by whole plants (16%), stems, bark, and rhizomes (6% each), among others (Figure 1). The mode of preparation and administration varies, with decoctions, infusions, and powders being the most common methods. The results also revealed that the majority of the plants investigated in the field are used to treat age-related ailments such as hypertension, diabetes, dementia, and osteoporosis. *Bidens pilosa* and *Tribulus terrestris* are used to treat hypertension, whereas *Gymnema sylvestre* is used to treat diabetes (Table 1). Medicinal plants such as *Bacopa monnieri*, *Withania somnifera*, *Pleurolobus gangeticus*, *Huperzia serrata* and *Gingko biloba* are used as traditional therapeutics to treat common neurological diseases and disorders such as dementia, Alzheimer’s disease, Huntington’s disease and Parkinson’s disease. The phytochemical constituents present in these plants include saponins, tannins, terpenoids, amino acids, polyphenols, anthocyanins, triterpenes, anthocyanins, resins, tartaric acid, formic acid, etc. *Celastrus paniculatus* and *Prinsepia utilis* are used in rheumatic problems. *Bidens pilosa* and *Catharanthus roseus* are used to treat hypertension; *Terminalia arjuna* is used to treat cardiac problems. Numerous age-related diseases and disorders are traditionally treated via the use of numerous medicinal plants, as indicated in Table 1, along with their origins and phytochemical constituents, which may help alleviate these difficulties, as shown in Table 2. The most popular plants used to cure geriatric diseases are discussed below.

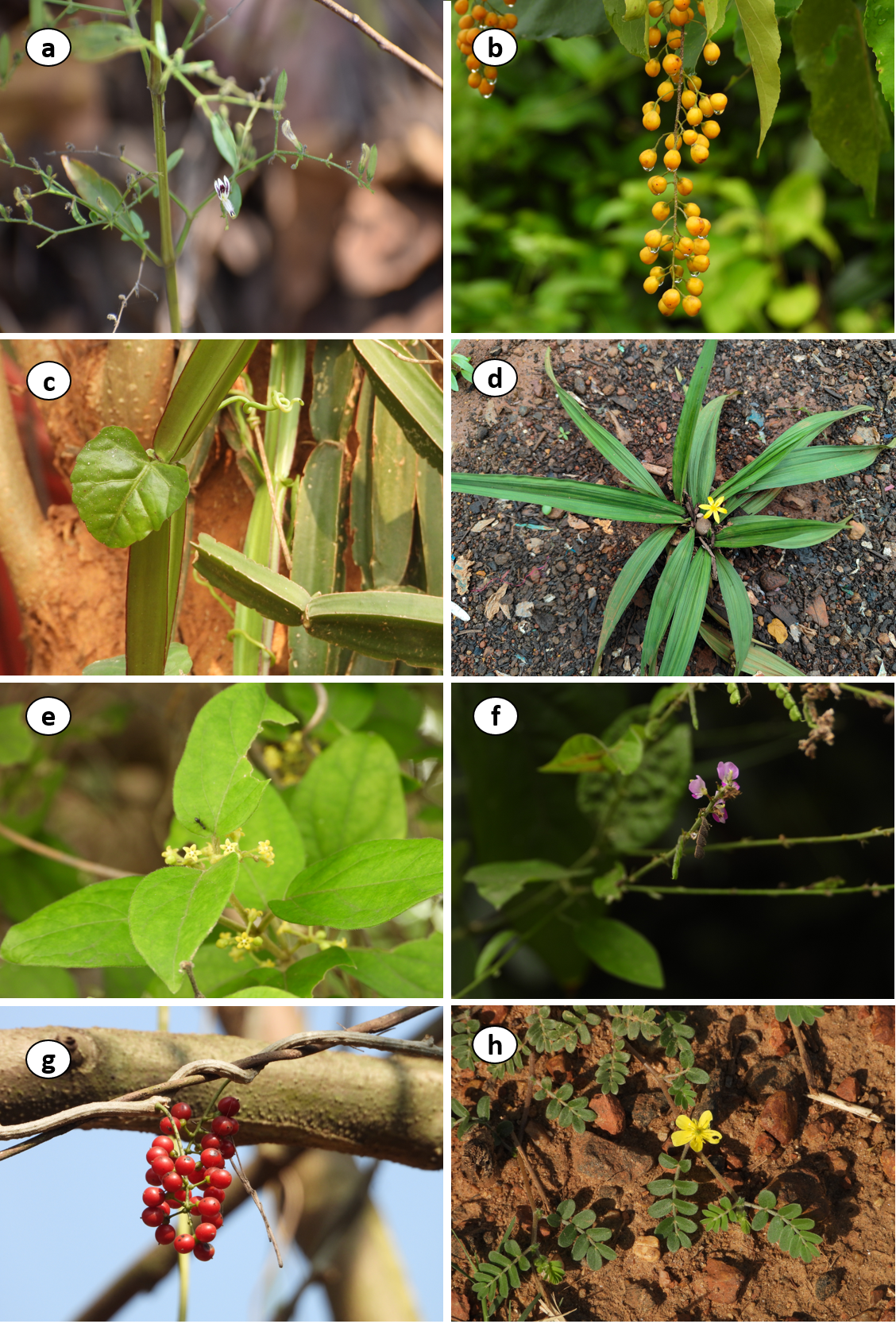
**Table 1:** Important medicinal plants used to treat geriatric diseases

|  |  |  |  |
| --- | --- | --- | --- |
| **Botanical Name** | **Family** | **Part(s) & Mode of Use(s)** | **Reference(s)** |
| *Achyranthes aspera* | Amaranthaceae | Leaf decoction is used gastric problems. | Kumari *et al.,* (2024) |
| *Aegle marmelos* | Rutaceae | Leaf decoction or leaf paste is used to treat cataract. | Choudhary *et al.,* (2021) |
| *Andrographis paniculata* | Acanthaceae | Leaf decoction is used to treat diabetes and during cold and fever. | Devi *et al.,* (2022) |
| *Bacopa monnieri* | Plantaginaceae | Leaves are used to treat dementia caused due to Alzheimer’s disease. | Basheer *et al.,* (2022) |
| *Bidens pilosa* | Asteraceae | Decoction, maceration, or powder are used in hypertension. | Kuo *et al.,* (2021) |
| *Catharanthus*  *roseus* | Apocynaceae | Decoction of roots and leaves is prescribed against hypertension and diabetes. | Kumari *et al.,* (2024) |
| *Celastrus paniculatus* | Celastraceae | Root powder is given to treat rheumatism. Seed oil is used to treat joint pain. | Deodhar and Shinde, (2015) |
| *Centella asiatica* | Apiaceae | Leaf extract is effective in reducing oxidative stress in the brains of Parkinson’s patients. | Sissique *et al.,* (2014) |
| *Cissus quadrangularis* | Vitaceae | Stem helps to maintains bone homeostasis and ultimately reduces or prevents bone loss in osteoporosis. | Nath *et al.,* (2024) |
| *Crocus sativus* | Iridaceae | Flowers help to treat disorders of the nervous system. | Perry *et al.,* (2011) |
| *Curculigo orchioides* | Hypoxidaceae | Rhizomes are utilized to strengthen bones and tendons, which helps prevent osteoporosis. It is also used treatment of piles. | Present study; Bhukta *et al.,* (2023) |
| *Curcuma longa* | Zingiberaceae | Rhizome is used as a therapeutic agent in treatment of various eye diseases such glaucoma, cataract etc. | Liu *et al.,* (2017) |
| *Euphorbia hirta* | Euphorbiaceae | Whole plant infusion is used as eye drop to treat glaucoma. | Devi *et al.,* (2022) |
| *Ginkgo biloba* | Ginkgoaceae | Seeds are used in traditional Chinese medicine to manage dysfunctions of the heart and lungs. Leaves are used widely for dementia. | Yuan *et al.,* (2017) |
| *Gymnema sylvestre* | Apocynaceae | Three to four leaves are eaten daily in the morning to treat diabetes. | Devi *et al.,* (2022) |
| *Huperzia serrata* | Lycopodiaceae | Whole plant used for the treatment of memory loss. | Perry *et al.* (2011) |
| *Murraya koenigii* | Rutaceae | Decoction of leaves is used in diarrhea and to maintain blood sugar level. | Kumari *et al.,* (2024) |
| *Panax ginseng* | Araliaceae | It is used as tonic and helps in prolonging youthfulness. | Perry *et al.,* (2011) |
| *Pleurolobus gangeticus* | Fabaceae | Root is used to treat dementia. | Mahajan and Kumar, (2015) |
| *Prinsepia utilis* | Rosaceae | Seed oil is used for massaging  rheumatic joints. | Kumari *et al.,* (2024) |
| *Psidium guajava* | Myrtaceae | Consuming fruit helps to reduce and maintain high blood pressure. | Kumari *et al.,* (2024) |
| *Punica granatum* | Lythraceae | Consuming fruit with luke warm water helps to maintain blood sugar levels. | Kumari *et al.,* (2024) |
| *Ricinus communis* | Euphorbiaceae | Poultice of  leaves used in  bruises and swollen joints. | Kumari *et al.,* (2024) |
| *Syzygium cumini* | Myrtaceae | The bark is used in  digestive problems, astringent to the  bowels and has anthelmintic activity. | Kumari *et al.,* (2024) |
| *Terminalia arjuna* | Combretaceae | Bark powder is administered twice daily to treat coronary artery disease. | Dwivedi *et al.,* (2014) |
| *Tinospora cordifolia* | Menispermaceae | The alcoholic extract possesses cardioprotection against ischemia‒reperfusion induced myocardial injury. The stem decoction is also taken to boost immunity. | Sharma *et al.,* (2011); Present study |
| *Tribulus terrestris* | Zygophyllaceae | It has a significant antihypertensive effect both systolic and diastolic blood pressure. | Murthy *et al.,* (2000) |
| *Urtica dioica* | Urticaceae | Leaf extract helps in maintaining the blood glucose level. | Kumari *et al.,* (2024) |
| *Withania somnifera* | Solanaceae | Root juice is taken after the meal in night to treat Alzheimer’s disease. Plant extract is also effective against other neurogenerative disorders such as Huntington's and [Parkinson's disease](https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/parkinsons-disease). | Dar and Ahmad, (2020) |

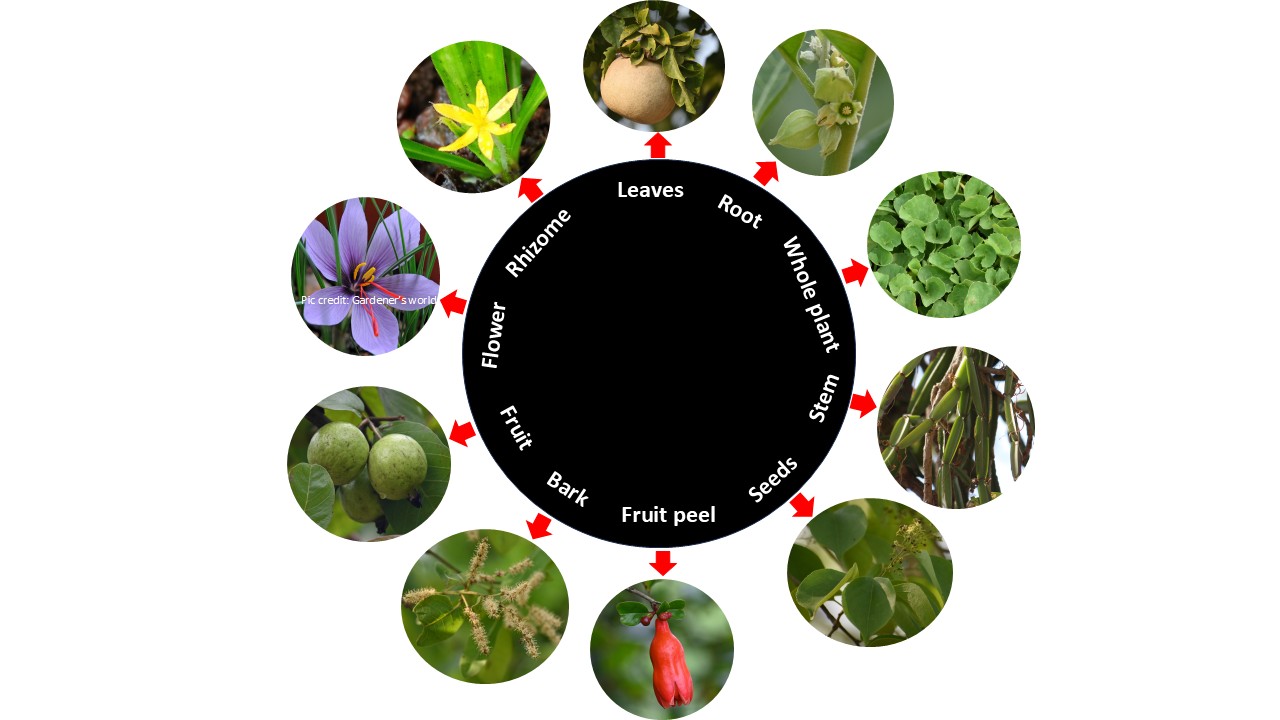
**Figure 1:** Frequencies of plant parts utilized for medicinal purposes

**Table 2:** Phytochemical constituents of the medicinal plantsused to treatgeriatric diseases

|  |  |  |  |
| --- | --- | --- | --- |
| **Medicinal Plant** | **Part** | **Phytochemical constituents** | **Source(s)** |
| *Achyranthes aspera* | Leaves | Flavonoids, saponins and tannins | Das *et al.,* (2012) |
| *Aegle marmelos* | Leaves | γ-sitosterol, β-sitosterol, [rutin](https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/rutin), glycosides, marmeline, halfordiol, aegelin, marmesinin, phenyl ethyl cinnamamides and [lupeol](https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/lupeol) | Sarkar *et al.,* (2020) |
| *Andrographis paniculata* | Leaves | Saponins, tannins, terpenoid and steroids | Kasarkar *et al.,* (2025) |
| *Bacopa monnieri* | Leaves | Saponins, tannins, flavonoids, steroids terpenoids and glycosides | Singh, (2012) |
| *Bidens pilosa* | Whole plant | Flavonoids, steroids, triterpenoids, tannins and phenols | Son *et al.,* (2022) |
| *Catharanthus roseus* | Leaves | Alkaloids, flavonoids, sterols, saponins, amino acid, polyphenols and anthocyanins. | Sharma *et al.,* (2024) |
| *Celastrus paniculatus* | Seeds | Alkaloids (celapanin, celapanigin, celapagin, celastrine and paniculatine), palmitic acid, phytol, erucic acid, trans- β-copaene and linalool | Ali *et al.,* (2020) |
| *Centella asiatica* | Whole plant | Terpenoid alcohols, aromatic amine, alcohols, alkanes, caryophyllene and steroids. | Naidu *et al.,* (2023) |
| *Cissus quadrangularis* | Leaves and stem | Tannins, phenol flavonoids, triterpenoids, phytosterols, glycosides, saponins, and alkaloids | Hamid and Patil (2023) |
| *Crocus sativus* | Flowers | Fatty acid, apocarotenoids (crocetin, crocin, picrocrocin and safranal), flavonols quercetin, kaempferol, isorhamnetin glycosides), anthocyanins (delphinidin 3-O-glucoside, delphinidin 3,7-diglucoside, petunidin 3-O-glucoside and malvidin-O-glycoside) | Bakshi *et al.,* (2022) |
| *Curculigo orchioides* | Rhizomes | Alkaloids, flavonoids, phenols and tannins | Saxena *et al.,* (2022) |
| *Curcuma longa* | Rhizomes | Saponins, terpenoids, glycosides, tannins, and alkaloids | Javed *et al.,* (2020) |
| *Euphorbia hirta* | Whole plant | Alkaloids, flavonoids, saponins, tannins, terpenoids, quinones and coumarins | Haruna *et al.,* (2023) |
| *Gingko biloba* | Leaves | flavonoids (Quercetin, Rutin, Kaempferol, Isorhamnetin), terpene trilactones (ginkgolides and bilobalide) | Okhti *et al.,* (2021) |
| *Gymnema sylvestre* | Leaves | Triterpene saponins, anthraquinones, pentatriacontane, phytin, resins, tartaric acid, flavones, hentriacontane, formic acid, butyric acid, lupeol | Tiwari *et al.,* (2014) |
| *Huperzia serrata* | Whole plant | Alkaloids, terpenoids, volatile oils, and flavonoids | Chu *et al.,* (2025) |
| *Murraya koenigii* | Leaves | Alkaloids, flavonoids, saponins, phenolics and tannins | Arif *et al*., (2024) |
| *Panax ginseng* | Not mentioned | Polysaccharides, ginsenosides, peptides, polyacetylenic alcohols and fatty acids | Ru *et al.,* (2015) |
| *Pleurolobus gangeticus* | Not mentioned | Alkaloid, flavonoids, saponins, phospholipids, phenols glycolipids, sterols, and flavone glycosides | Sahu *et al.,* (2025) |
| *Prinsepia utilis* | Not mentioned | Alkaloids, flavonoids, phenolics, and terpenoids | Prakash *et al.,* (2024) |
| *Psidium guajava* | Fruit | Glycosides, flavanoids, alkaloids, saponins, vitamin, carbohydrate, aminoacid | Joseph *et al.,* (2016) |
| *Punica granatum* | Peel | Tannins, flavonoids, alkaloids, phenols, flavonoids, alkaloids and steroids | Noreen *et al.,* (2025) |
| *Ricinus communis* | Leaves | Alkaloids, triterpenoids and glycosides | Aneja *et al.,* (2024) |
| *Syzygium cumini* | Bark | Terpenoids, alkaloids, catechins, phenols, quinones, saponins and tannins | Jagetia, (2017) |
| *Terminalia arjuna* | Bark | Phytosterol, lactones, flavonoids, phenolic compounds, tannins and glycosides | Mandal *et al.,* (2013) |
| *Tinospora cordifolia* | Leaves and stem | Flavonoids, amino acids, diterpines, protein, saponins and carbohydrates | Chahande *et al.,* (2024) |
| *Tribulus terrestris* | Whole plant | Tannins, saponins, flavonoids, terpenoids, phenolic compounds, reducing sugars and alkaloids | Verma *et al.,* (2025) |
| *Urtica dioica* | Not mentioned | Flavonoids, tannins, scopoletin, sterols, fatty acids, polysaccharides, isolectins and sterols | Asgarpanah and Mohajerani, (2012) |
| *Withania somnifera* | Roots | Alkaloids, amino acids, steroids, volatile oil, starch, reducing sugars, glycosides, hentriacontane, dulcitol and withaniol | Uddin *et al.,* (2012) |



**Plate 1:** Some common plants used to treat geriatric diseases: a) *Andrographis paniculata,* b) *Celastrus paniculatus*, c) *Cissus quadrangularis*, d) *Curculigo orchioides*, e) *Gymnema sylvestre*, f) *Pleurolobus gangeticus,* g) *Tinospora cordifolia*, and h) *Tribulus terrestris*



**Figure 2:** Plants with different parts used to treat geriatric diseases

**CONCLUSION**

The present study highlighted the use of 30 local medicinal plants for managing geriatric diseases. In the present study, uses and their bioactive compounds are provided, and baseline data for further advanced work are also given. This study also draws attention to the use of local plant resources in a sustainable manner and for conservation.

**Disclaimer (Artificial intelligence)**

Authors hereby declare that for data collection, photographs and illustration, no AI technologies are used. For grammar check, Meta A1 is used.

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