Available online on 15.12.2021 at http://jddtonline.info

Journal of Drug Delivery and Therapeutics

Open Access to Pharmaceutical and Medical Research

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Open Access Full Text Article Research Article

Linkages of Leaves Moisture of Medical Plant (*Senecio L.)* and Elevation in *Shan County*

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Article Info:

Article History:

Received 17 October 2021

Reviewed 02 December 2021

Accepted 08 December 2021

Published 15 December 2021

Cite this article as:

Liao BH, Linkages of Leaves Moisture of Medical Plant (*Senecio L.*) and Elevation in *Shan County*, Journal of Drug Delivery and Therapeutics. 2021; 11(6-S):79-85

DOI: http://dx.doi.org/10.22270/jddt.v11i6-S.5136

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Abstract

A key plant species (*Senecio L.*) not only is a vital multilevel functional medicinal material of indications of respiratory tract infections, tonsillitis, pharyngitis, pneumonia, conjunctivitis, enteritis, dysentery, but also it is a widely distributed wide plant species. This plant species is widely distributed elevation from 500m to 1500m in six landscapes in *Shan County* of China. However, understanding dynamics of leaves moisture of the plants is difficult along elevation. Herein showed that linkages between leaves moisture of the species and elevation is a significant positive connection from 500m to 1000m (P<0.01) as well as linkages between leaves moisture of this species to elevation is a significant negative connection from 1000m to 1500m(P<0.01). Herein provides six types and eco-adaptation for finding new species. Therefore, this study has theoretical and vital practical significance for plants protection along elevation and environmental gradient over the spatial-temporal-environmental-disturbance scales (STEDS) in interdisciplinary research from species diversity, ecosystems diversity and landscape diversity.

Keywords: leaves moisture; elevation; relationship; eco-adaptation; eco-functional value; medicinal plant.

Abbreviation: STEDS, the spatial-temporal-environmental-disturbance scales.

Introduction

Leaves moisture effects medical plants growth and plant sustainable evolution along elevation scale. Natural environmental and plantation factors often integrated effects of the human activities and acid rain on medicinal plant species by the research of process for deposition of thin films[1-3]. But medicinal plant functional more traits may be finding through key physiological characters of antireflection coatings and ecological functional traits along elevation gradient[4-7]. Using plant leaf oxide films technological tools[8-10], scientists explain that multilevel functional traits of medical species[11,12] and medical plant communities[13,14] by dynamic framework model[15] for food chains[16].

For instance, dynamics of community's height[17], tree community's total trunk volume[18], plant community's tree individual number[19], plant individual specie's and plant communities' crown volume[20,21] of medicinal plant (*Sophora japonica*) along elevation. Although limits to local agricultural landscape area for protecting more natural landscapes[22] (e.g., grasslands, wetlands, water and forests) or some half natural landscapes (e.g., green ecological urban and beautiful green countryside) areas for sustainable medical plant species, but dynamics of total dry biomass[23], total fresh biomass[24], vegetation coverage[25], plant average height[26], roots cuticle biomass[27], leaf -stalk biomass[28], stems cuticle biomass[29], species pair's co-dominance abundance dominancy[30], Important Value[31] and moisture content[32] of (*Cremastra Appendiculata*) also deeply research.

Therefore, it is a vital topic issues that the relationship between gene level and medical plant roots cuticle functional traits[33,34], as well as the dynamics of roots cuticle biomass[35], fresh roots biomass[36], stems cuticle biomass[37] associations with daily solar radiation for human cognitive[38] medical plant[39], especially, risk assessment and early warning mechanism (e.g., watersheds areas)[40,41]. In short, herein explains linkages between leaves moisture of this plant and elevation.

Typical environmental condition, situation of typical vegetation and methods of research

Study area is local in three typical zones: firstly, evergreen vegetation of north subtropical zone; secondly, evergreen and deciduous coniferous and broad-leaved mixed forest of north subtropical and warm temperate transition; thirdly, deciduous vegetation of warm temperate zone in Earth. Thus, this area is local in evergreen and deciduous coniferous and broad-leaved mixed forest in north subtropical and warm temperate transition in *Shan County* of China at STEDS (Figure 1).

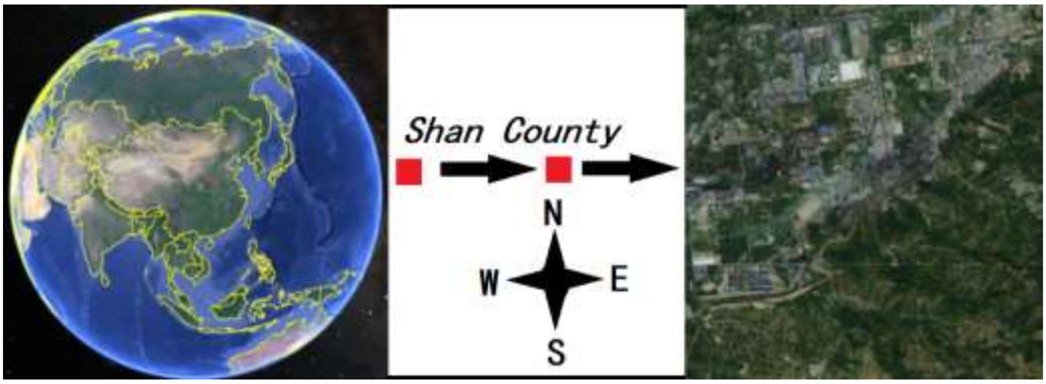

Figure 1: A Digital Cadaster Map of Typical Location in *Shan County* of China on Earth.

There is a long-time investigation links of medicinal plant species leaves moisture to elevation from 2005 to 2019. Investigation of "big data" included that leaves moisture of medicinal plant species or other eco-index of medicinal plant species along elevation gradient over STEDS[42,43].

So, there is the relation between leaves moisture of (*Senecio L.*) and elevation, as well as there is a series of six landscapes areas ecological adaptation of leaves moisture of this plant species by the "big data" of ecological investigation, qualitative analysis, and quantitative statistics, human cognitive ecological linguistic rules, scientific theories and ecosystem space planning methods.

Results and Analysis

Based on "big data" of plant investigation, this species is a widely distributed wide species along elevation from 500m to 1500m. A key species (*Senecio L.*) is a widely distributed along the different elevation from 500m to 1500m in *Shan County* of China. However, understanding the elevation effect on the linkage between leaves moisture of this plant species and elevation is very difficult, because key elevation influences plant biomass[43], bryophyte and lichen biomass[44], wood biomass[45], mushroom biomass and diversity biomass[46], production of medicinal plant species[47].

Applying the dynamics of "big data" investigation, this work suggested there are five rules:

Firstly, herein showed that it is not only the increasing of (*Senecio L.*) leaves moisture with the increasing of elevation from 500m to 1000m, as well as there are but also the decreasing of (*Senecio L.*) leaves moisture with increasing of elevation from 1000m to 1500m (Figure 3).

Table 1: Leaves Moisture of this Medical Plant Species Association with Elevation Gradient

Leaves Moisture along Elevation	Leaves Moisture of This Medical Plant Species
Elevation From 500 to 1000	0.906*
Elevation From 1000 to 1500	-0.969**

Note: *, $P<0.05$; **, $P<0.01$.

Secondly, this study explained that there is a significant positive connection between (*Senecio L.*) leaves moisture and elevation from 500m to 1000m ($P<0.01$), as well as there is a significant negative connection between (*Senecio L.*) leaves moisture and elevation from 1000m to 1500m in *Shan County* of *Henan Province* of China over STEDS ($P<0.01$) (Table 1).

Thirdly, this research shows the best areas ecological adaptation of (*Senecio L.*) from 500m to 1500 in *Shan County* of China. Because there are results that there are not only different natural environmental factors, there are but also the dynamics of different elevation environmental factors from 500m to 1500m by the dynamics of leaves moisture of this medical species (Figure 1, 2).

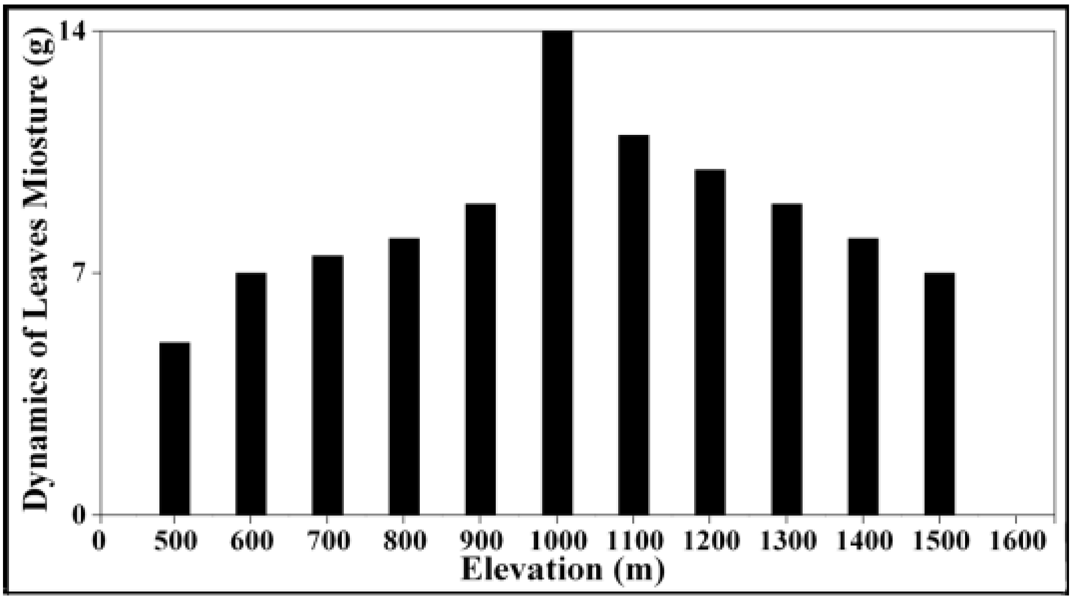

Figure 2: Dynamics of (*Senecio L.*) Leaves Moisture along Elevation Gradient

Fourthly, this research proposed that the medicinal plant species (*Senecio L.*) is local in the six typical landscape types (forests, mixed between forests and grassland, mixed between forests and wetland, mixed between forests and river, mixed between forests and eco-urban, mixed between forests and countryside) by the "big data" of this plant leaves moisture investing along elevation, because there may be results that there are not only dynamics of natural environments, there are but also dynamics of climate environmental factors from 500m to 1500m along elevation gradient.

Figure 3: Total Structures of Medical Plant Species (*Senecio L.*) by Long-time Investigation

Fifthly, the typical medical plant species (*Senecio L.*) not only is a vital functional medicinal material of indications of treating to respiratory tract infections, tonsillitis, pharyngitis, pneumonia, conjunctivitis, dysentery and enteritis, but also it is belonging to *Compositae* families of *Senecio* races of Discotyledoneae in Angiospermae, especially, total structures of (*Senecio L.*) (Figure 3).

Thus, this research found a series of typical areas ecological adaptation of plant (*Senecio L.*) of indication of treating respiratory tract infections, tonsillitis, pharyngitis, pneumonia, conjunctivitis, enteritis, dysentery along elevation gradient, as well as there is linking of the medical plant species (*Senecio L.*) leaves moisture and elevation gradient in *Shan County* of *Henan Province* of China.

Discussion

The respiratory tract infections, tonsillitis, pharyngitis, pneumonia, conjunctivitis, dysentery and enteritis always influence public health, which often led human died. But understanding dynamics of medicinal plant species is very difficult issues, for instance, molecular dynamics[48], evolutionary dynamics[49] and indigenous medical plant[50]. So, finding a vital multilevel functional medicinal plant (*Senecio L.*) of indications of respiratory tract infections, tonsillitis, pharyngitis, pneumonia, conjunctivitis, enteritis and dysentery not only is a key value plant species, but also treating many people's diseases or saving human. As such, it is a key ecological adaptation that (*Senecio L.*) were found from 500m to 1500m in *Shan County* of *Henan Province* of China. And this research suggested three linkages between leaves moisture of (*Senecio L.*) and elevation at STEDS:

1. This work showed that it is an increasing of (*Senecio L.*) leaves moisture with enhancing of elevation from 500m to 1000m; it is decreasing of (*Senecio L.*) leaves moisture with increasing of elevation from 1000m to 1500m (Figure 2). It is a significant positive connection between leaves moisture of (*Senecio L.*) and elevation from 500m to 1000m (P<0.01) as well as it is a significant negative connection between leaves moisture of (*Senecio L.*) and elevation from 1000m to 1500m along elevation gradient over STEDS in *Shan County* (P<0.01) (Table 1).

2. This research provides six landscape types (forests, mixed landscape between forests and grassland, mixed landscape between forests and wetland, mixed landscape between forests and river, mixed landscape between forest and eco-urban, mixed landscape between forests and green beatified countryside), as well as there is a series of ecological adaptation of landscape areas (for instance, the best areas ecological adaptation of (*Senecio L.*) from 500m to 1500m) for finding this plant (*Senecio L.*) by the dynamics of (*Senecio L.*) leaves moisture along elevation gradient.

3. (*Senecio L.*) not only is a vital multilevel functional medicinal material of indications of treating to respiratory tract infections, tonsillitis, pharyngitis, pneumonia, conjunctivitis, dysentery and enteritis, but also it is belonging to *Compositae* families of *Senecio* races of Discotyledoneae in Angiospermae, as well as it is widely distributed wide specie by the "big data" investigation of (*Smilax scobinicaulis*) leaves moisture in *Shan County* of *Henan Province* of China (Figure 2, 3).

Indeed, better regional regulators and local government need better planning and regulation many medicinal plant species sustainability[51] of ecosystems by researches on the key biomass of medicinal plants[52] along elevation and environments with dynamics of plant diversity in the global, regional and landscapes natural ecosystem types with the ways "big data" investigation, scientific quantitative statistics[53] by landscape stability and sustainable medical plant diversity production[54]. Local government planner will protects habitats of this medical plant species (*Senecio L.*) by the lands eco-restoration[55,56] and integrated strategy technology[57] for avoiding plant species loss[58] in six landscape areas of this medical ecological adaptation. Because of upgrading protected areas is a way with protection indigenous medical plant species[59] for future eco-socioeconomic services[60].

Conclusion

This research has a vital theoretical and practical significance for the reasonable protection of (*Senecio L.*) along elevation gradient, because this plant species not only is an important widely distributed wide medicinal material pant by treating infections, tonsillitis, pharyngitis, pneumonia, conjunctivitis, enteritis and dysentery, but also is five rules by linking (*Senecio L.*) leaves moisture to elevation. Therefore, herein has theoretical-practical significance for the multi-functional values by linkages between medicinal plants (*Senecio L.*) leaves moisture and elevation along environs, then, the planner needs integrated conservation priority areas from investments in natural capital.

Acknowledgement

This work was supported by A Grade of Key Disciplines of Environmental Science Foundation, B Grade of Key Disciplines of Mistrials Science of *Ping-Ding-shan University* in China; Science and Technology Department of *He'nan Province* Foundation (KJT-17202310242; 092102110165); Subprojects by Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES); and better ideas of researchers of "1st Biotechnology World Congress" in 2011, "2st Biotechnology World Congress" in 2012, "3st Biotechnology World Congress" in 2013 is appreciated.

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