

Short Note on Asteraceae as Traditional Food and Medicinal Plants in Cihanjavar Village, Purwakarta Regency, West Java

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Abstract

Asteraceae is known as the largest family of flowering plants. Despite some species members being invasive plants, these species are often adopted and utilized by local community groups for food, traditional medicine, and other uses. In our ethnobotanical study of Asteraceae, we identified ways a local Sundanese community group in West Java utilizes a diverse range of species in the family for different purposes. Our study focuses on a Sundanese village called Cihanjavar, located in the regency of Purwakarta, using ethnobotany and ethnomedicine approaches. People of Cihanjavar utilize some species of Asteraceae for food as 'lalapan' and traditional medicinal purposes. In-depth, semi-structured interviews with the people of Cihanjavar were conducted to collect primary data regarding the utilization of Asteraceae species as food and traditional medicine. A total of eight species of Asteraceae were found during the field-guided exploration in Cihanjavar Village, which include *Acmella paniculata*, *Ageratum conyzoides*, *Calyptocarpus vialis*, *Crassocephalum crepidioides*, *Dichrocephala integrifolia*, *Emilia sonchifolia*, *Erechtites valerianifolia*, *Sphagneticola trilobata*, some of which are considered invasive alien species. The species of *A. paniculata*, *C. crepidioides*, *E. sonchifolia*, *Er. valerianifolia* is eaten as a raw food (lalapan, Ind.). Then *Ag. Conyzoides* and *C. crepidioides* are utilized in traditional medicine. *C. vialis*, *D. integrifolia*, and *Sphagneticola trilobata* are not used by the people of Cihanjavar as food or as traditional medicine.

Keywords: Asteraceae, ethnobotany, ethnomedicine, lalapan, Sundanese

1. Introduction

Asteraceae Bercht. & J.Presl (1820) or the sunflower family is known as the largest plant family in Angiospermae with 1,700 genera and 24,000 species that are well distributed worldwide except Antarctica [1]. Due to their distribution, species of Asteraceae are considered invasive alien species, which grow well outside their native range. According to Setyawati et al. [2] and Trjitosoedirjo et al. [3], some species of Asteraceae have been recorded as important alien species e.g., *Ageratum conyzoides*, *Austroeuatorium inulifolium*, *Bidens pilosa*, and others. Invasive alien species raises a certain issue on its impacts, including a threat to local biodiversity, human health, and economic interest [4]. Apart from being invasive, local people still utilize Asteraceae daily for food and traditional medicine. This is particularly true for

Sundanese people who have unique habits of consuming fresh plants as vegetables known as lalapan [5]. Septiani et al. [6] recorded that Sundanese people in Naga Traditional Village, Tasikmalaya Regency, consume various species of Asteraceae, including *Conyza sumatrensis*, *Lactuca sativa*, and other species. For medicinal purposes, Tahniah [7] also discovered that the Sundanese people of Cireundeu Traditional Village, Cimahi City, utilize *Blumea balsamifera* to treat diarrhea.

One of the Sundanese villages in West Java that are particularly interesting due to their seclusion and traditional practices is Cihanjavar Village, located in the Purwakarta Regency, West Java. The people of Cihanjavar are mainly farmers. However, they also utilize natural resources for their daily needs due to their proximity to forests, rice fields, and farmlands. People of Cihanjavar use a wide range of plants for different purposes. For example, they grow paddy (*Oryza sa-*

tiva), cassava (*Manihot esculenta*), lima bean (*Phaseolus lunatus*), common bean (*P. vulgaris*), winged bean (*Psophocarpus tetranogonolobus*), banana (*Musa spp.*), tomato (*Solanum lycopersicum*), scallion (*Allium fistulosum*), and garlic chives (*A. tuberosum*) for food and market crops. Various species of Asteraceae are also found in Cihanjavar Traditional Village and are utilized extensively despite being considered weeds in their farm. This study therefore aims to explore the relationship between the species of Asteraceae and the people of Cihanjavar through their use as food and traditional medicine.

2. Methodology

The study was conducted in Cihanjavar Village, Purwakarta Regency, West Java in May 2017. In-depth, semi-structured

interviews with two key informants which are also farmers in Cihanjavar were conducted to collect primary data regarding the utilization of Asteraceae species as food and traditional medicine. In addition to this, an exploration was also carried out using the field guide method, during which we observed the surrounding paddy fields and farmlands with of a local guide from the Cihanjavar Villagers. The species of Asteraceae which have been collected during the field-guided exploration were then identified using the 'A Guidebook of Invasive Plant Species in Indonesia' [2], '75 Important Invasive Plant Species in Indonesia' [3], and 'Weeds of Rice in Indonesia' [8]. The maps and environment of Cihanjavar is shown in figure 1 and 2, respectively.



Figure 1. Maps of Cihanjavar Village, Purwakarta Regency, West Java (Google Maps, 2023)



Figure 2. Cihanjavar Village, Purwakarta Regency, West Java

3. Results and Discussion

3.1 Diversity and Traditional Uses of Asteraceae in Cihanjavar Village

A total of eight species of Asteraceae were found during the field-guided exploration, mainly in the paddy fields and farmlands in Cihanjavar Village, Purwakarta Regency, West Java, of which only five species are utilized as food or medicinal plants. The five species are *Acmella paniculata*, *Ageratum conyzoides*, *Crassocephalum crepidioides*, *Emilia sonchifolia*,

lia, and *Erechtites valerianifolia*. Three species, i.e., *A. paniculata*, *E. sonchifolia*, and *Er. valerianifolia* are only used as food. In addition, *Ag. conyzoides* is the only species used for medicinal purposes, while *C. crepidioides* is the only species used for food and medicinal plants. The people of Cihanjavar do not utilize the other three species. This includes *Calyptocarpus vialis*, *Dichrocephala integrifolia*, and *Sphagneticola trilobata*. The complete result of Asteraceae species including traditional uses in Cihanjavar Village is shown in Table 1.

Table 1. List of species and utilization of Asteraceae in Cihanjavar Village, Purwakarta Regency, West Java

Species	Local Names	Traditional Uses		Plant Parts use
		Food	Medicine	
<i>Acmella paniculata</i>	Jotang	Sautéed	-	L, I
<i>Ageratum conyzoides</i>	Babandotan	-	External wound	L
<i>Calyptocarpus vialis</i>	-	-	-	-
<i>Crassocephalum crepidioides</i>	Sintrong	Eaten raw as <i>lalapan</i> , sauteed	Headache and hypertension	L
<i>Dichrocephala integrifolia</i>	-	-	-	-
<i>Emilia sonchifolia</i>	Jonge	Eaten raw as <i>lalapan</i> , sautéed	-	L
<i>Erechtites valerianifolia</i>	Jonggol	Sautéed	-	L
<i>Sphagneticola trilobata</i>	Wedelia	-	-	-

Note: L = Leaves; I = Inflorescence

In the context of traditional food, the way people of Cihanjavar consume *A. paniculata*, *C. crepidioides* and *E. sonchifolia* are by eating them raw or known as *lalapan* as the Sundanese habit and then sautéed as vegetables. *A. paniculata* is the only species which both the leaves and inflorescence are consumed. For *C. crepidioides* and *E. sonchifolia*, leaves are the only part eaten. For the traditional medicinal aspect,

the people of Cihanjavar believe that *Ag. conyzoides* can heal an external wound. The crushed leaves of *Ag. conyzoides* are rubbed onto the wounded skin surface. Another plant used for traditional medicine, *C. crepidioides*, is believed to treat headaches and hypertension by consumption of the leaves, although further implementation was not fully explained. Some species of Asteraceae are shown in Figure 3.

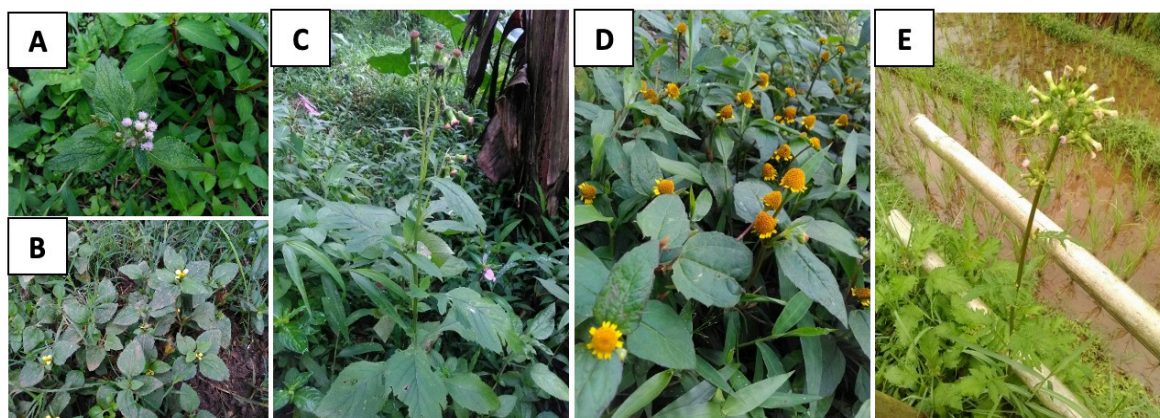


Figure 3. (A) *Ageratum conyzoides*, (B) *Calyptocarpus vialis*, (C) *Crassocephalum crepidioides*, (D) *Acmella paniculata*, and (E) *Erechtites valerianifolia*

3.2 The Validation on Traditional Food Uses

Some species of Asteraceae are found and utilized by people of Cihanjavar and other Sundanese people in Naga Traditional Village, Tasikmalaya Regency. According to Septiani et al. [6] people of Naga also consume *E. sonchifolia* and *A. paniculata* as 'lalapan', which are eaten directly without any process. People of Cihanjavar utilize the leaves, the same plant part as Naga's. However, the people of Naga only consume *A. paniculata* leaves, unlike those of Cihanjavar who consume both leaves and flowers.

Besides in West Java, the Sundanese in Banten or well known as Baduy Tribe, utilized Asteraceae as food plants. The study from Iskandar & Iskandar [9] discovered that Sundanese Baduy Tribe consume *Er. Valerianifolia* as vegetables. Other than the Sundanese people in West Java & Banten, research conducted by Kurniawan et al. [10] in Dieng Plateau, Central Java, found 18 species of Asteraceae, most of which are also used as food and medicinal plants. Some of the species in the Dieng Plateau can also be found and consumed by people in Cihanjavar Village, such as *A. paniculata* and *C. crepidioides*. In Dieng Plateau, the leaf is also the plant part which is consumed. Besides, study from Fauziana & Susandarini [11] in Tawangmangu, Karanganyar Regency, Central Java, showed that other than being utilized as medicinal plants, *E. sonchifolia* is also consumed as vegetables.

Leaves are the most utilized plant part, particularly in food uses. It is mainly because leaves are the part that has the highest regeneration rate, in a sense that it can sprout repeatedly and therefore will not impact that much the growth of the plant regardless of the photosynthesis taking place inside the leaves [12]. Leaves possess a plenty of metabolites from photosynthesis [13,14]. In addition, leaves are rich in vitamin B9, vitamin K, and carotenoids [6, 15]. Leaves are the most accessible plant part and can grow faster than others [6].

3.3 The Validation on Traditional Medicinal Uses

In an ethnobotanical study, the utilization of plant for traditional medicine by local people can be validated by conducting research regarding the chemical compounds or secondary metabolites which possesses bioactivity of the plant. A study carried out by Dash & Pn [16] showed that methanol and aqueous extracts of *Ag. conyzoides* leaves showed a faster rate of wound healing in wounded rats. According to Fitriani [17], leaves of *Ag. conyzoides* possess secondary metabolites, such as alkaloid compounds. This secondary metabolite could be the reason why treatment using its leaves will recover faster.

According to Adjatin et al. [18], *C. crepidioides* is utilized for blood pressure regulation by local people of Benin (in Africa region). From this, people of Cihanjavar also use *C. crepidioides* as a treatment for hypertension and headache. In terms of the chemical compounds and secondary metabolites, *C. crepidioides* contains tannin, flavonoid, and phenols also possesses the potential as anti-inflammatory, antioxidant,

immunomodulatory, antimicrobial, anti-tumour, and anti-diabetic [19].

Another Sundanese people in West Java, particularly from Banceuy Traditional Village, Subang Regency, utilize some species of Asteraceae as medicinal plants, according a study from Weking et al. [20]. For example, they utilize, *Ag. conyzoides* and *C. crepidioides* which are also found and applied in Cihanjavar Village are used to treat external wounds and hypertension, respectively.

3.4 A Note on The Invasiveness of The Eight Species

Out of the eight species of Asteraceae that we have found during our field exploration, *A. paniculata*, *Ag. conyzoides*, *C. crepidioides*, *E. sonchifolia*, *Er. valerianifolia*, and *S. trilobata* are considered invasive alien species [2,3], while *D. integrifolia* is the only native species commonly found in their natural habitat in West Java. In addition, *C. crepidioides*, *Er. valerianifolia*, and *S. trilobata* were recorded as 75 Important Invasive Plant Species in Indonesia [3]. Since most the Cihanjavar people have livelihood as farmers and live next to the ricefield, some of the Asteraceae species which found were also recorded as a weed of ricefield by Soerjani et al. [8], such as *Ag. conyzoides*, *C. crepidioides*, and *E. sonchifolia*.

These invasive species have been known to cause problems in different places with a few control has been implemented. In conservation sites, some Asteraceae species are commonly found such as in Cibodas Botanical Park [21], Masigit-Kareumbi Hunting Park [22, 23], and in plantation site like corn plantation [24], ricefield [25], and pine & sweet potato plantation [26], and sugarcane [27]. The invasive species we found in Cihanjavar, on the other hand, is not particularly controlled, but due to active weeding and their use as both food and medicine, their population can be controlled. We still do not have sufficient data to show how intensive the use of these species is for consumption to certainly state that there is a balance between the invasiveness of the plant and their utilization. However, a changing dietary pattern and shift to modern medicine will certainly disrupt this mode of traditional control and potentially the ecosystem. Further study is needed to explore this phenomenon.

4. Conclusion

In Cihanjavar Village, Purwakarta Regency, West Java, we found eight species of Asteraceae during the field guided exploration in Cihanjavar Village, including *Acmella paniculata*, *Ageratum conyzoides*, *Calyptocarpus vialis*, *Crassocephalum crepidioides*, *Dichrocephala integrifolia*, *Emilia sonchifolia*, *Erechtites valerianifolia*, *Sphagneticola trilobata*. *A. paniculata*, *E. sonchifolia*, and *Er. valerianifolia* are only used as food. *Ag. conyzoides* is the only species used for medicinal purposes, while *C. crepidioides* is the only species that uses food and medicinal plants. Leaves are the most plant part used as food and traditional medicine, while the flower of *A.*

paniculata is used as food. *C. vialis*, *D. integrifolia*, and *S. trilobata* are not used by the people of Cihanjawan as food and traditional medicine. From this, we understand that the practice of local knowledge in Cihanjawan Village regarding plant utilization traditionally is still maintained. The fact that some of these Asteraceae are invasive species shows that the traditional community has adapted to new species by integrating them into their daily lives. This also hints on local ways to control the population of invasive species through sustainable utilization. A shift to a different dietary pattern might disrupt this balance, which requires further research to be carried out.

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