The making of *Gynura procumbens* powder

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**Abstract.** *Gynura procumbens*, also known as *sambung nyawa* is a medicinal plant that belongs to Astereceae family. Many research and studies shows that *Gynura procumbens* is well known for its bioactive compounds and health benefits. *Gynura procumbens* leaves are often consumed raw or added in cooking. *Gynura procumbens* leaves are easily withered and rotten because of its high moisture. Therefore, the aim of this study was to make the *Gynura procumbens* as a powder that can be used and more applied, especially in the production of food and drinks as a form of food diversification and functional food. The making of *Gynura procumbens* powder consists of sorting, washing, blanching, drying, blending, sieving, packing and sealing, then analysing its moisture, total ash, and crude fibre. The powder was analysed using standard official methods and three replicates. The analysis results of the *Gynura procumbens* powder were moisture (6.6773%) which is lower than in the fresh leaves (82.4898%), total ash (6.3846%) which is higher than in the fresh leaves (4.3232%), and crude fibre (5.5527%) which is lower than in the fresh leaves (6.4458%).

1. **Introduction**

*Gynura procumbens*, commonly called as *sambung nyawa* is a medicinal plant that belongs to Astereceae family. It is also known as “Bai Bing Cao” in Chinese that means “100 ailments” and called as longevity spinach because of its health benefits. This plant is commonly found in tropical Asia countries such as Indonesia, Malaysia, China, Thailand, and Vietnam [1]. *Sambung nyawa* is a fast growing plant which can grow from 1-3 m with a fleshy stem and purple tint. It has ovate-elliptic or lanceolate shaped leaves which is approximately 3.5-8 cm long and 0.8-3.5 cm wide [2].

Many research and intensive studies done on *sambung nyawa* (*Gynura procumbens*) extracts have discovered many valuable and scientific evidence of its therapeutic potential on biological activites. For instance, the plants are high in antihypertensive and cardioprotective activity, antihyperglycemic activity, anticancer activity, antimicrobial activity, antioxidant activity, organ protective effect, anti-inflammatory effect, and sexual and reproductive function enhancement activity because of the presence of bioactive compounds [3].

*Sambung nyawa* often used as medicine because it contains chemical bioactive compounds, such as flavonoid, unsaturated sterol, triterpenoid, polyphenol, saponin, steroid, chlorogenic acid, caffeic acid, vanillic acid, para-kumaric acid, para-hydroxy benzoic acid, dan essential oil. Its phytochemical screening showed that *sambung nyawa* has a potential as an anti-cancer [4]. Based on identification test of [5], ethanolic extract of *sambung nyawa* contains alkaloid, phenolic, saponin, steroid, tannin, and terpenoid.
Sambung nyawa leaves are often consumed raw or added in cooking. Therefore, this study was conducted to make the sambung nyawa (Gynura procumbens) as a powder that can be used and more applied, especially in the production of food and drinks as a form of food diversification and functional food.

2. Materials and methods
The reagents used in this study were n-hexane, sodium hydroxide (NaOH), sulphuric acid (H₂SO₄), ethanol 96%, ascorbic acid, oxalic acid 1%, trichloroacetic acid (TCA) 10%, iron trichloride (FeCl₃) 0.1%, phosphate buffered saline (0.2 M pH 6.6), potassium ferricyanide (K₃Fe(CN)₆) 1%, and aquadest.

The making of sambung nyawa powder: the leaves were sorted and washed thoroughly. Then, the leaves were soaked in boiled water for 5 seconds. After that, the leaves were drained and dried in an oven blower at 50 ºC for 24 hours. The dried leaves were blended and the powder was sieved 80 mesh. The powder was then packaged and sealed in a polypropylene plastic bag. Finally, the powder was analysed to determine the moisture, total ash [6] and crude fibre [7] using the standard official methods with three replications. The making of the sambung nyawa powder can be seen in Figure 1.

3. Results and discussion
Analysing was undertaken to determine the characteristic of sambung nyawa powder (Table 1).

Table 1. The content of sambung nyawa (Gynura procumbens) powder

| Parameter         | Analysis Result  |
|-------------------|------------------|
| Moisture content (%) | 6.6773 ± 0.3169 |
| Total ash (%)     | 6.3846 ± 0.1317  |
| Crude fibre (%)   | 5.5527 ± 0.3647  |

Note: The analysis was done with 3 replications, (±) sign shows the standard deviation

3.1. Moisture content
The moisture content of sambung nyawa powder is 6.6773%. The standard for moisture of powder is below 10% based on Indonesian Herbal Pharmacopoeia [8]. [9] showed that moisture in Gynura
procumbens leaves were 82.4898% on wet basis which is very high and easily withered or rotten. The uses of Gynura procumbens is still limited either eaten fresh or added in cooking. In order to prolong the storability and increase the uses of Gynura procumbens, the fresh leaves were processed into powder. The lower the moisture of the powder produced, the longer the storability because it will prevent the growth of microbial and prevent the chemical reactions during storage [10]. The result isn’t much different from the research done by [11] which shows the moisture in Moringa oleifera powder is 7.4812%.

3.2. Total ash
The total ash of sambung nyawa powder is 6.3846%. The standard for total ash of powder is below 10.2% based on Indonesia Herbal Pharmacopoeia [8, 12]. Based on the research done by [9], the total ash in Gynura procumbens leaves were 4.3232%. This shows that sambung nyawa contains high mineral. The higher the total ash of the powder means the higher the mineral in the powder produced [13].

3.3. Crude fibre
The crude fibre of sambung nyawa powder is 5.5527%. Based on the research done by [9], the crude fibre in Gynura procumbens leaves were 6.4458%. As for the crude fibre in Moringa oleifera powder were 11.4743% [11]. Different kinds of natural plants contain varying amounts of crude fibre. Crude fibre has a role in promotion of health and disease risk reduction, such as maintaining a healthy weight, preventing constipation, coronary heart diseases and cancer [14].

4. Conclusions
Sambung nyawa (Gynura procumbens) is a medicinal plant that has many health benefits because of bioactive components which has the antioxidant activity. The purpose of making the Gynura procumbens into powder are to prolong the storability and make it easier to be used for different kind of purposes, either for cooking, pharmaceutical, or industrial. The Gynura procumbens powder has 6.6773% of moisture which is lower than in the fresh leaves (82.4898%), 6.3846% of total ash which is higher than in the fresh leaves (4.3232%), and 5.5527% of crude fibre which is lower than in the fresh leaves (6.4458%). Research and evaluation should be done and applied more extensively explored with modern scientific research so that it can better known, stay-cultivated, beneficial and used more widely.

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