

## PHOTOCHEMICALS OF SENGKUBAK (*Phycnarrhena caulilflora*) LEAF EXTRACT

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### Abstract

*Phycnarrhena caulilflora* commonly known as sengkubak is a plant that can be used, namely the leaves of the sengkubak plant (*Phycnarrhena caulilflora*) commonly used by the Dayak community as a flavoring ingredient for their daily food. Sengkubak leaves have the most dominant secondary metabolites contained in the leaves, namely Alkaloids. Sengkubak is a shrub or tree in the liana group that belongs to the Menispremaeae family. Sengkubak is commonly found in West Kalimantan at an altitude of 100-150m above sea level, both in the lowlands and hills. Sengkubak has leaves on flower stalks with a length of 3 - 9.5 cm. The research design used in this study is a descriptive method that provides an overview of the phytochemical content contained in sengkubak leaves. *Phycnarrhena caulilflora* can be bacteriostatic or bactericidal depending on the dose used

**Keywords:** Fitokimia, Sengkubak Leaf, Metabolites.

### Introduction

Indonesia has many plants, even in each region has its own special types of plants. Many plants are used to prevent or cure health diseases, be it bacterial infections or others, many regions in Indonesia have their own way of processing these plants so that they can be used to prevent or cure health.

Examples of plants that can be used are the leaves of the sengkubak plant (*Phycnarrhena caulilflora*) commonly used by the Dayak people as a flavoring ingredient for their daily food. Sengkubak leaves have the most dominant secondary metabolites contained in the leaves, namely Alkaloids (Purba et al., 2014). In addition to containing alkaloids, sengkubak leaves have compounds that can be used for dental caries, namely and the compounds contained in the leaves are such as Alpha.-bergamotene, Alpha cubecene, Trans(.beta)-caryophyllene, Alpha.-humulene, Beta.-sesquiphellandrene, Alloaromadendrene, and Germacrene-d (Dhanang, 2020).

*Pycnarrhena caulilflora* commonly known as sengkubak, sanksang or basil imbo is a shrub or tree in the liana group that belongs to the Menispermaceae family. Sengkubak is commonly found in West Kalimantan at an altitude of 100-150m above sea level, both in the lowlands and hills. Sengkubak has leaves on flower stalks with a length of 3 - 9.5 cm. Larger leaves can reach 12.5 cm more. Sengkubak is widely used by the Dayak community as a basic ingredient for food or as a substitute for flavorings such as vetsin.

### Material and Method

The research design used in this study is a descriptive method that provides an overview of the phytochemical content contained in sengkubak leaves.

### Result and Discussion

The test results of sengkubak leaf extract showed that sengkubak leaf extract contained terpenoids, flavonoid alkaloids and saponins. Sengkubak extract has the potential to inhibit and kill bacteria because according to (Puspita et al., 2020) the antibacterial compounds known to be contained in sengkubak leaves are terpenoids, alkaloids, flavonoids, and saponins.

1. The mechanism of action of flavonoids as antibacterial is to form complex compounds with extracellular and dissolved proteins so that they can damage bacterial cell membranes and are followed by the release of intracellular compounds (Ngajow et al., 2013).
2. The mechanism of alkaloid compounds as antibacterial is to interfere with the peptidoglycan constituent components of the bacterial cell wall (Tiara et al, 2018). Peptidoglycan is a constituent component of the bacterial cell wall so that if there is interference with the bacterial cell wall, it can cause the cell wall layer to not form and cause cell death.
3. The mechanism of action of saponins as antibacterial is by lowering the surface tension of the bacterial cell wall. Saponins will bind to lipopolysaccharides on the bacterial cell wall resulting in increased cell wall permeability so that if there is an interaction the cell wall will undergo lysis or rupture and make antibacterial substances enter the cell and interfere with metabolism until bacterial death occurs (Sari et al., 2015).
4. Terpenoids are also contained in sengkubak leaf extract. Terpenoids are also one of the compounds that have an antibacterial mechanism. Terpenoids have a mechanism of action by damaging the bacterial cell membrane. This occurs when antibacterial active compounds react with membranes or by dissolving lipid constituents and increasing membrane

permeability. With an increase in membrane permeability, antibacterial compounds can enter the cell and destroy the cell membrane or coagulate the cytoplasm of the bacterial cell (Friska et al, 2017).

Overall data shows that the active compounds in sengkubak leaf extract have potential as antibacterial. The higher the concentration of sengkubak leaf extract, the greater the ability of the sengkubak leaf extract to inhibit or kill bacteria. So this is appropriate according to (Brooks et al, 2010) that a substance in inhibiting or killing bacteria is also influenced by the amount of concentration.

This is also in accordance with research (Puspita et al., 2020) which describes that sengkubak leaves (*Phycnarrhena caulilflora*) have anti-caries properties on teeth such as Alpha.-bergamotene (cas).

## Conclusion

Based on the results and discussion obtained, it can be concluded that sengkubak leaf extract (*Phycnarrhena caulilflora*) has potential antibacterial activity against *S. mutans* bacteria and sengkubak leaf extract (*Phycnarrhena caulilflora*) can be bacteriostatic or bactericidal depending on the dose used.

## References

- Ngajow, M., Abidjulu, J., & Kamu, V. S. (2013). Antibacterial Effect of Matoa Stem (*Pometia pinnata*) peels Extract to *Staphylococcus aureus* Bacteria In Vitro. *Jurnal MIPA UNSRAT*, 2(2), 128–132.
- Purba, D. M., Wibowo, M. A., & Ardiningsih, P. (2014). *AKTIVITAS ANTIOKSIDAN DAN SITOTOKSIK EKSTRAK METANOL DAUN SENGKUBAK ( Phycnarrhena cauliflora Diels )*. 3(2), 7–12.
- Puspita, D., Kristen, U., & Wacana, S. (2020). ANALISIS SENYAWA BIOAKTIF PADA DAUN KEMANGI IMBO ( *Pycnarrhena cauliflora* ) YANG DIGUNAKAN SEBAGAI PENYEDAP ALAMI ( Analysis Of Bioactive Compounds in Kemangi Imbo Leaf ( *Pycnarrhena c ... ANALISIS SENYAWA BIOAKTIF PADA DAUN KEMANGI IMBO ( Pycnarrhena cau. Jurnal Teknologi Pangan Dan Gizi*, 19(July), 35–43. <https://doi.org/10.33508/JTPG.V19I1.2452>
- Riskesdas, K. (2018). Hasil Utama Riset Kesehata Dasar (RISKESDAS). *Journal of Physics A: Mathematical and Theoretical*, 44(8), 1–200. <https://doi.org/10.1088/1751-8113/44/8/085201>

- Sari, I. P., Wibowo, M. A., & Arreneuz, S. (2015). Aktivitas Antibakteri Ekstrak Teripang Butoh Keling (*Holothuria Leucospilota*) Dari Pulau Lemukutan Terhadap Bakteri *Propionibacterium Acnes* Dan *Staphylococcus Epidermidis*. *Jurnal Kimia Khatulistiwa*, 4(4), 21–28.
- Tiara Dwicahyani, Sumardianto, L. R. (2018). Uji Bioaktivitas ekstrak teripang keling *Holothuria atra* SEBAGAI ANTIBAKTERI *Staphylococcus aureus* dan *Escherichia coli*. *Uji Bioaktivitas Ekstrak Teripang Keling Staphylococcus Aureus Dan Eschericia Coli*, 7, 10.