



ISPO (Indonesian Science Project Olympiad)

JASLUM BIOPHONECASE:

**Antimicrobial and Biodegradable Mobile Phone Case from Jasmine Flower
(*Jasminum sambac* L) and Frangipani Flower (*Plumeria alba* L) Ethanol
Extract**



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ABSTRACT

Mobile phones have become an essential part of everyday life. Contamination of mobile phones by bacteria and fungi have converted a serious health problem that has to be urgently prevented. Biophonecase is one of the environmentally benign methods for protected mobile phones. This study aims to establish the JASLUM biophonecase as an antimicrobial and biodegradable phone case from the ethanol extract of jasmine flower (*Jasminum sambac* L) and frangipani flower (*Plumeria alba* L). The natural phone case was made from various contents of ethanol extract of jasmine flower (*Jasminum sambac* L) and frangipani flower (*Plumeria alba* L) were 12:0, 0:12, 6:6, 8:4, 4:8 (% w/w) respectively. Additional components were 1 % w/w of dimethyl sulfoxide (DMSO) as a solvent, gelatin (16 % w/w) as a solidifier, and glycerol (3 % w/w) as a plasticizer.

The antimicrobial activity test of JASLUM biophonecase including antibacterial (*Staphylococcus aureus*, *S. epidermidis*, *Escherichia coli*, *Bacillus subtilis*) and antifungal (*Candida albicans*, *Aspergillus niger*) were carried out by Kirby-Bauer diffusion method. The biodegradable test was conducted by a soil burial test. Tannin, flavonoid, saponin, and phenolic content of the extracts were measured by qualitative phytochemical screening assays. The physical biophonecase properties include tensile strength and elongation examined by a universal testing machine.

The results show that the optimum antimicrobial potentials were observed for 6%, 6%, 1%, 16%, 3% of jasmine flower extract, frangipani flower extract, DMSO, gelatin, and glycerol respectively. All composition JASLUM Biophonecase showed biodegradable in the soil for 4 days. Tannin, flavonoid, and phenolic were identified from jasmine flower and frangipani flower ethanol extract. JASLUM biophonecase has tensile strength value 19,856 MPa and percentage elongation 30,074 %.

keywords: antibacterial, anti fungal, biodegradable, phone case