

# SKRIPSI

DESAK KETUT ERNAWATI

**PENGARUH KONSENTRASI ION  $Cd^{2+}$   
TERHADAP PERTUMBUHAN DAN KANDUNGAN  
FITOSTEROID DARI KULTUR KALUS  
*COSTUS SPECIOSUS* (KOEN) F8**



MILIK  
PEPUSIAAN  
UNIVERSITAS AIRLANGGA  
SURABAYA

**FAKULTAS FARMASI  
UNIVERSITAS AIRLANGGA  
SURABAYA  
2000**

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Sebagai salah satu syarat untuk memperoleh gelar Sarjana Sains (SSI)

Pada Fakultas Farmasi Universitas Airlangga

Surabaya

2000



Oleh :

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A handwritten signature in black ink, appearing to be "Gunawan", written over a large, faint circular stamp.

**Prof. Dr. Gunawan Indrayanto**  
**Pembimbing Utama**

A handwritten signature in black ink, appearing to be "Sugijanto", written over a large, faint circular stamp.

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## ABSTRACT

### **Influence of Cadmium Ions on The Growth and Phytosteroid Content in Callus Cultures of *Costus speciosus* (Koen) F8**

**Key words :** Cadmium Ions, Phytosteroid Content, Growth Index, and Callus Cultures of *Costus speciosus*

To more understand the factors which influence phytosteroid biosynthesis, in this work the influence of cadmium ions on the growth and phytosteroid content of callus cultures of *Costus speciosus* was studied. The in vitro cultures were cultivated on modified Murashige Skoog containing 2 mg/L Kinetin and 0,5 mg/L 2,4 D, with the addition of 0, 0.5, 1, 2.5, 10, and 20 ppm cadmium ions.

The Growth Index of these callus cultures seemed to decrease with the increasement of cadmium ions concentration, following cubic regression equation. The maximum value of the growth indeks occurred in control cultures with no cadmium addition while the minimum value was occurred in the cultures with addition of 20 ppm cadmium ions.

Microscopic investigation on callus biomass by adding diluted HCl and Na<sub>2</sub>S showed that the treated cells contained cadmium ions. Qualitatively analysis of diosgenin by TLC showed there was no diosgenin found in hydrolysate fraction of control and treated culture, whereas sterols were detected. Further investigation using Gas Chromatography showed various sterols content among control cultures and treated cultures.

Densitometric method was used to analyze free sterols and bounded sterols. The highest level of free sterols and bounded sterols were in the treated cultures with 0,5 ppm cadmium ions. The lowest level of free sterols was in control cultures, whereas bounded sterols was in treated cultures with 20 ppm of cadmium ions.