

## ABSTRAK

Kanker lidah manusia mempunyai karakteristik penyakit yang sukar disembuhkan dan termasuk salah satu masalah kesehatan utama di dunia. Prognosis kanker lidah masih belum memuaskan, walaupun telah dilakukan perawatan secara holistik. Tujuan penelitian untuk menganalisis pengaruh fraksi etil asetat ekstrak nanas simadu dalam menginduksi apoptosis pada kultur sel kanker lidah (SP-C1) melalui *caspase* -3 dan -9.

Metode penelitian yang dilakukan adalah eksperimental laboratorium, dengan menggunakan kultur sel kanker lidah SP-C1. Sel SP-C1 diperlakukan dengan fraksi etil asetat nanas simadu dalam berbagai konsentrasi: 0, 125, 250, 500, 750 dan 1000 µg/ml, dan diinkubasi selama 12, 24 dan 48 jam. Semua sampel dilakukan uji kolorimetrik menggunakan *caspase* -3 dan -9 yang diobservasi dengan alat *Biorad microplate reader* panjang gelombang 405 nm. Data dianalisis dengan *Levene's test*, *Post Hoc* dilanjutkan anova 3 faktorial dengan *Duncan's test* dan uji korelasi *Pearson's*.

Hasil penelitian menunjukkan peningkatan aktivitas proteolitik *caspase* -3 pada konsentrasi 1000 µg/ml dengan waktu inkubasi 12 jam dan 48 jam dibandingkan waktu 24 jam ( $p=0,041$ ). Sedangkan *caspase* -9 terjadi peningkatan aktivitas proteolitik secara deskriptif. Korelasi yang kuat ditemukan pada *caspase* -3 dan *caspase* -9 dengan waktu inkubasi 12 dan 48 jam ( $r=0,918$  dan  $0,980$ ).

Kesimpulan fraksi etil asetat ekstrak nanas simadu mempunyai potensi yang kuat meningkatkan apoptosis sel kanker lidah (SP-C1) melalui jalur *caspase* -3 dan -9.

Kata kunci: fraksi etil asetat buah nanas simadu, *caspase* -3 dan -9, kultur sel SP-C1

## Abstract

Human oral tongue cancers (Oral Tongue Squamous Cell Carcinoma/OTSCC) are characterized by difficulty of illness cured and included the main problems of health. The prognosis of OTSCC is still unsatisfied, although it has been cured by holistic treatment. The aim of the study was to investigate the effect of ethyl acetate fraction of simadu pineapple (*Ananas comosus* Merr.) on apoptosis induction of SP-C1 cancer cells through caspase-3 and -9 pathways.

The laboratory experimental design was conducted in the study. Furthermore, to detect the apoptosis induction using caspase-3 and -9 on SP-C1 cell treated by various concentration (0, 125, 250, 500, 750 and 1000 µg/ml) of ethyl acetate fraction of simadu pineapple (*Ananas comosus* Merr.) was analyzed by colorimetric assay. Cells were treated by ethyl acetate fraction of simadu pineapple (*Ananas comosus*) with incubation time of 12, 24 and 48 hours. All of sample was observed using Biorad microplate reader machine with 405 nm wavelength. Data were analyzed by Levene's test, Three-way ANOVA followed by Post Hoc test (Duncan's test), and Pearson's correlation test with level of significant 95%.

Results of the study revealed that proteolytic activity of caspase-3 was significantly increased compared with that of caspase-9 on incubation time of 12 hours ( $P=0.041$ ). Caspase-3 and -9 were found to have a strong correlation on 12 and 48 hours with  $r = 0.918$  and  $0.980$ , respectively.

In conclusion, ethyl acetate fraction of simadu pineapple (*Ananas comosus*) may effect on apoptosis induction of SP-C1 cancer cells through increasing the activity of caspase-3 and -9 pathways.

Key words: ethyl acetate fraction of extract simadu pineapple, caspase -3, and -9, SP-C1 cell lines.