ABSTRAK

Latar Belakang. Masih tingginya angka kejadian kanker di dunia, di regional dan di Indonesia, dimana angka kejadian kasus baru kanker payudara, kanker serviks uteri dan kanker paru menduduki peringkat tertinggi di Indonesia. Penggunaan *Anthracycline doxorubicin* sebagai agen anti-neoplastik yang sangat efektif pada berbagai jenis kanker pada orang dewasa dan anak-anak, termasuk hematologis dan tumor padat, namun doksorubisin memiliki organotoksisitas yang serius, termasuk toksisitas pankreas. Kandungan berbagai senyawa dari ekstrak buah Balakka (*Phyllanthus emblica L.*) yang telah berhasil diidentifikasi melalui berbagai penelitian, terutama potensi sebagai agen protektif pankreas, melalui aktivitas antioksidan, anti diabetes/ hiperglikemik, dan anti hiperlipidemik.

Tujuan. Untuk mengetahui potensi efek protektif ekstrak etanol buah Balakka (*Phyllanthus emblica L.*) terhadap toksisitas pankreas yang diinduksi doksorubisin pada tikus.

Metodologi. Penelitian ini menggunakan penelitian eksperimental dengan rancangan acak lengkap untuk mengetahui potensi efek protektif dari ekstrak etanol buah Balakka (*Phyllanthus emblica L.)* terhadap toksisitas pankreras yang diinduksi doksorubisin pada tikus (*Rattus norvegicus*).

Hasil. Hasil uji fitokimia kualitatif ekstrak etanol buah Balakka mengandung alkaloid, flavonoid, fenol, steroid/triterpenoid, terpenoid dan tanin. Dari hasil uji beda rerata kadar glukosa darah serial > 2 kelompok Kruskal Wallis, maka dijumpai nilai signifikasi $p<0,05$, artinya paling sedikit ada 2 kelompok yang memiliki perbedaan yang bermakna secara signifikan, pada kadar glukosa puasa ($p = 0,003$*) dan hasil uji TTGO pada menit ke-30, menit ke-60 dan menit ke-120 ($p = 0,000$*; $p = 0,001$*; $p = 0,007$*). Kadar rerata glukosa darah puasa dari semua kelompok perlakuan, berada pada rentang normal 90 – 110 mg/dL. Pada menit ke-120 TTGO, dijumpai kadar rerata glukosa darah pada kelompok doksorubisin, mencapai 149,00 ± 7,99 mg/dL, masih lebih tinggi dibandingkan dengan kadar rerata kelompok ekstrak, perlakuan 1 dan 2 ($p<0,05$). Dan kadar rerata glukosa darah kelompok perlakukan 1 dan 2 lebih rendah secara bermakna dibandingkan kadar rerata glukosa darah kelompok doksorubisin ($p = 0,009$*; $p = 0,009$*).

Kesimpulan. Ekstrak etanol buah Balakka *Phyllanthus emblica L.* mengandung senyawa flavonoid, fenol, tanin, triterpenoid, terpenoid dan alkaloid. Pemberian ekstrak etanol buah Balakka dengan dosis 400 mg/kgBB dapat mengatasi toksisitas pankreas dengan menjaga keseimbangan kadar glukosa melalui penurunan kadar glukosa darah pada menit ke-30, menit ke-60, dan menit ke-120 mendekati normal serta dapat memperbaiki jaringan pankreas tikus pada kelompok tikus dengan hepatotoksisitas yang diinduksi doksorubisin.

Kata Kunci : *Phyllanthus emblica*, toksisitas pankreas, doksorubisin, fungsi dan jaringan pankreas

ABSTRACT

Background. There is still high incidence of cancer in the world, in the regional and in Indonesia, where the incidence rate of new cases of breast cancer, cervical cancer and lung cancer ranks highest in Indonesia. The use of anthracycline doxorubicin as an anti-neoplastic agent that is very effective in various types of cancers in adults and children, including haematological and solid tumors, but doxorubicin has serious organotoxicity, including pancreatic toxicity. Content of various compounds from Balakka fruit extract (*Phyllanthus as Emblica L.*) which has been successfully identified through various studies, especially the potential as a protective agent of the pancreas, through antioxidant activity, anti-diabetes/hyperglycemic, and anti-hyperlipidemic.

Purposes. To find out the potential protective effect of the ethanolic extract *Phyllanthus emblica L.* (Balakka) fruit against pancreatic toxicity induced doxorubicin in rats.

Methodology. The study used experimental studies with complete randomized designs to find out the potential protective effect of the ethanolic extract *Phyllanthus emblica L.* (Balakka) fruit against pancreatic toxicity induced doxorubicin in rats (*Rattus norvegicus*).

Results. The Results of a qualitative phytochemical test of the ethanolic extract *Phyllanthus emblica L.* (Balakka) fruit contains alkaloids, flavonoids, phenols, steroids/triterpenoids, terpenoids and tannins. From the results of the difference test of the mean blood glucose levels series within > 2 Group with Kruskal Wallis's test, there was a statistically significance value of $p < 0.05$, meaning there were at least 2 groups that have a statistically significant differences in the mean of fasting glucose levels ($p = 0.003$ *) and the mean of blood glucose of OGTT in the 30^{th} minutes, 60^{th} minutes and 120^{th} minutes ($p = 0.000$ *; $p = 0.001$ *; $p = 0.007$ *). The mean of fasting blood glucose levels of all groups were at the normal range levels of 90 – 110 mg/dL. In the 120^{th} minute OGTT, we found the mean of blood glucose levels in the group of doxorubicin, reaching 149.00 ± 7.99 mg/DL, still higher than the mean of blood glucose levels of the extract group, the 1^{st} treatment and 2^{nd} treatment group ($p < 0.05$). And there was a statistically significant of the mean of blood glucose levels in the 1^{st} treatment group and 2^{nd} treatment group more lower than the mean of blood glucose level in the group of doxorubixcin ($p = 0.009$ *; $p = 0.009$ *).

Conclusions. The ethanolic extract *Phyllanthus emblica L.* (Balakka) fruit contains alkaloids, flavonoids, phenols, steroids/triterpenoids, terpenoids and tannins. The administration of the ethanolic extract Balakka fruit with a dose 400 mg/kgbb can against a doxorubicin-induced pancreatic toxicity by maintaining the balance of blood glucose levels through decreased blood glucose levels in the 30^{th} minute, 60^{th} minute, and 120^{th} minute of approaching normal and can repair the rat pancreatic tissue in the rat group with a doxorubicin-induced pancreatic toxicity.

Keywords : *Phyllanthus emblica*, pancreatic toxicity, doxorubicin, function and histology of pancreas