

INTISARI

Latar Belakang:

Gagal ginjal kronis dapat terjadi karena vasokonstriksi berkepanjangan yang mengganggu aliran darah, menyebabkan cedera tubulus dan fibrosis. Cedera tubulus karena kerusakan kapiler peritubular yang menyebabkan hipoksia sel tubulus akan mengakibatkan apoptosis atau transdiferensiasi epitel-mesenkimal. Asiatic acid, asiaticoside 6 dan SM2 pada *Centella asiatica* terbukti menurunkan angka kematian sel saraf akibat H₂O₂ dan mengurangi konsentrasi radikal bebas intraseluler. Belum diketahui pengaruh ekstrak *Centella asiatica* sp. terhadap cedera tubulus.

Tujuan :

Penelitian ini bertujuan untuk mengetahui pengaruh pemberian ekstrak *Centella asiatica* sp. terhadap cedera tubulus (skor cedera tubulus, ekspresi vimentin dan E-cadherin) pada mencit dengan nefrektomi subtotal 5/6.

Metode:

Kami menggunakan mencit *Swiss-webster* dengan nefrektomi subtotal 5/6 (SN) sebagai model gagal ginjal kronis. Prosedur *sham operation* (SO, n=5) digunakan sebagai kontrol. Mencit dengan nefrektomi subtotal 5/6 (SN7, n=5) dan mencit dengan nefrektomi subtotal 5/6 disertai pemberian CA (SN7 CeA, n=5) dikorbkan setelah tujuh hari diberi tindakan. Skor cedera tubulus dikuantifikasi berdasarkan pewarnaan *Periodic Acid Schiff* (PAS) dari preparat *paraffin*. Kami melakukan ekstraksi RNA, pembuatan cDNA dan *Reverse Transcriptase* PCR (RT-PCR) untuk menilai ekspresi E-cadherin dan vimentin.

Hasil:

Ekspresi E-cadherin didapatkan lebih tinggi pada kelompok SN7 CeA dibandingkan kelompok SN7 dan bermakna secara statistika ($p < 0,05$). Ekspresi vimentin dan skor cedera tubulus lebih rendah pada kelompok SN7 CeA dibandingkan kelompok SN7 dan bermakna secara statistika ($p < 0,05$).

Kesimpulan:

Centella asiatica diduga menghambat proses cedera tubulus yang mengarah pada gagal ginjal pada mencit dengan nefrektomi subtotal 5/6.

Kata Kunci:

Nefrektomi subtotal 5/6, *Centella Asiatica* sp, cedera tubulus, vimentin, E-cadherin.

ABSTRACT

Background:

Chronic kidney disease (CKD) may occur due to prolonged vasoconstriction which impair renal blood flow, this will lead to nepron loss, tubular injury and fibrosis. Tubulointersititial injury that caused by peritubular capillary damage, will leading to hipoxia of tubular cell and apopotosis then epithelial-mesenchymal transition process. *Centella asiatica* that consist of asiatic acid, aciaticoside 6 and SM2 has proved can decrease cell death caused by H₂O₂ and free radical activity in cell. There is no proof about effect of extract *Centella asiatica* in tubular injury.

Goal:

The purpose of this experiment is to know the effect of extract *Centella asiatica* sp. to tubular injury (tubular injury score, expression of vimentin and E-cadherin) in mouse with 5/6 subtotal nephrectomy.

Method:

We performed subtotal nephrectomy (SN) in male *Swiss-webster* mice (3-4 months, n = 15) then sacrifice the mice in day 7. CeA treatment (840 mg/kg Body weight) was administered in SN group (SN CeA). Sham operation was performed for control (SO group). Tubular injury score was quantified based on Periodic Acid Schiff (PAS) staining from paraffin slide. We performed RNA extraction, cDNA making and Reverse Transcriptase PCR (RT-PCR) to examine the expression of E-cadherin and vimentin.

Result:

SN induced higher tubular injury compared to control, meanwhile SN7 CeA had lower tubular injury compared to SN7. This is very associated with lower expression of E-cadherin (p<0,05) and higher expression of vimentin in SN7 group (p<0,05) compared to control. On the other hand SN7 CeA group had higher E-cadherin expression (p<0,05) and lower vimentin expression (p<0,05) compared to SN7 group.

Conclusion:

Extract *Centella asiatica* inhibit tubular injury progression and afterward chronic kidney disease in mouse with subtotal nephrectomy 5/6.

Key word:

Subtotal nephrectomy 5/6, *Centella asiatica* sp., tubular injury, vimentin, E-cadherin.