EFFECT OF CURCUMA LONGA EXTRACT ON HEPATIC NUCLEUS AND IL-1α AFFECTED BY CIGARETTE SMOKE

(Experimental Study in Sprague Dawley Rats)

EFEK EKSTRAK CURCUMA LONGA TERHADAP NUKLEUS HATI DAN IL-1α YANG DISEBABKAN OLEH ASAP ROKOK

(Studi Eksperimental pada Tikus Sprague Dawley)

Thesis
Submitted as partial fulfilling of the requirement for
Master degree of Biomedical Science

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APPROVAL PAGE

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(*Experimental study in Sprague Dawley Rats*)

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I hereby declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education, there are no plagiarism as referred to in Permendiknas No. 17 of 2010. Information derived from published or unpublished work of others has been acknowledged in the text and a list of reference is given.

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LIST OF ABBREVIATION

SD	:	Sprague Dawely
Curcuma L	:	*Curcuma longa* rhizome extract
DMSO	:	Di methyl sulfoxide oil: Number
R	:	Randomization
CS	:	Cigarette Smoke
R&D	:	Research and Development system
NAFLD	:	Non alcoholic Fatty Liver Disease
SREBP	:	Sterol Regulatory Element Binding Protein
AMPK	:	Adenosine MonoPhosphate Kinas
GERD	:	Gastro esophageal Reflux Disease
CLD	:	Chronic Liver Disease
HCC	:	Hepatocellular Carcinoma
CHC	:	Chronic Hepatitis C
ROS	:	Reactive Oxygen pecies
CMC	:	Cell Mediated Cytotoxicity
TR	:	Thioredoxin Reductase
NO	:	Nitric Oxide
NOS	:	Nitric Oxide Synthases
HE	:	Hematoxyllin Eosin
IL	:	Interleukin
WHO	:	World Health Organizatio

FAS L	: Fas ligand
COX	: Cyclo-oxygenase
IKK	: IκB kinase
GST	: Glutathione S-transferase
PKA	: Protein kinas' A
PKC	: Protein kinas' C
PhK	: Pherokine
CDPK	: Ca^{2+}-dependent protein kinase
ATP	: Adenosine Triphosphate
NF-KB	: Nuclear factor- KB
LOX	: Lipoxygenase
p53	: Tumor Suppressor gene
NK	: Natural killer cell
ABC	: Avidin Biotin Complex

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ABSTRACT

Background: damage effect of the passive smoking in liver tissue range from liver nucleus changes to liver tissue inflammation, *Curcuma longa rhizoma* shows anti-inflammatory effect and antioxidant, however there is no literature about its preventive effect.
Objective: to identify and analyze the preventive effect *of Curcuma longa rhizoma* extract on passive smoking induced liver nucleus changes in SD Rats.
Methods: This experimental study used randomized post-test only control group design in 12 SD Rats given 5 cigar as passive cigarette smoking with 50 minute as interval time between each cigarette daily for 13 weeks (group A), 13 weeks (group B) + oral *Curcuma longa rhizoma* extract with dose 80mg/.kg,B.W, after got passive smoke daily ,The liver nucleus change were HE stained and observed for liver nucleus changes ,and immunohistochemistry was undertaken to count the percentage of IL.1α stained according to Allred Score.
Result: the difference among group liver nucleus changes (A & B) were statistically significant (p=0.003). and between groups IL.1-α (A&B) statistically significant (p=0.007), preventive effect for the liver nucleus changes ,the difference of IL.1α expression among groups statistically significant (p=<0.05) .
Conclusion: there was preventive effect on liver nucleus changes in groups with *Curcuma longa rhizoma* extract and also there was preventive effect on the IL.1α expression with *Curcuma longa rhizoma* .

Key Words : *Curcuma longa rhizoma* extract ,cigarette smoking , liver nucleus changes , IL.1α expression.

ABSTRAK

Latar belakang: efek kerusakan jaringan hati yang disebabkan oleh merokok pasif berkisar dari perubahan inti sel hati sampai inflamasi jaringan hati. *Curcuma longa* rhizoma menunjukkan efek antiinflamasi dan antioksidan.Meskipun demikian, belum terdapat kepustakaan yang menunjukkan efek preventife.
Tujuan: untuk mengidentifikasi dan menganalisis efek preventife ekstrak *Curcuma longa rhizoma* terhadap perubahan inti sel hati yang diinduksi merokok pasif pada tikus SD.
Metode: studi eksperimental ini menggunakan desain randomized post-test only control group pada 12 ekor tikus SD yang diberik 5 batang rokok sebagai perokok pasif dengan interval 50 menit setiap periode merokok selama 13 minggu (kelompok A), 13 minggu + ekstrak *Curcuma longa rhizoma* per oral dengan dosis 80 mg/kgbb (kelompok B). Setelah itu dilakukan pewarnaan HE terhadap inti sel hati dan observasi perubahan inti, serta pemeriksaan imunohistokimia dilakukan untuk menghitung persentase IL.1α yang terwarnai berdasarkan skor Allred.
Hasil: terdapat perbedaan yang bermakna pada perubahan inti sel hati($p=0.003$) dan persentase IL.1-α ($p=0.007$)pada kelompak (A) dan (B). Sedangkan efek preventife untuk perubahan inti sel, terdapat perbedaan ekspreksi IL.1α yang bermakna antar kelompok ($P= < 0.05$).
Simpulan: terdapat efek preventife terhadap perubahan inti sel pada kelompok yang diberi ekstrak *Curcuma longa rhizome* serta terdapat efek preventife pada kelompok yang mengekspresikan IL.1-α dengan pemberian *Curcuma longa rhizoma.*

Kata kunci: ekstrak *Curcuma longa rhizoma,* merokok, perubahan inti sel hati, ekspresi IL.1α.