Ethanol Extract of *Curcuma xanthorrhiza* Rhizome as Hepatoprotector in Rats (*Rattus Norvegicus*) that CCl_4 induced to Malondialdehyde (MDA) Concentration by Thiobarbituric Acid (TBA) Test and Protein Profile by SDS-PAGE.

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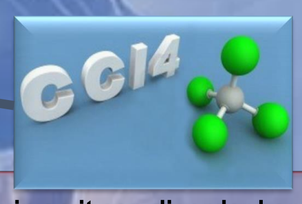
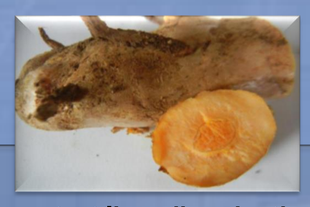
INTRODUCTION



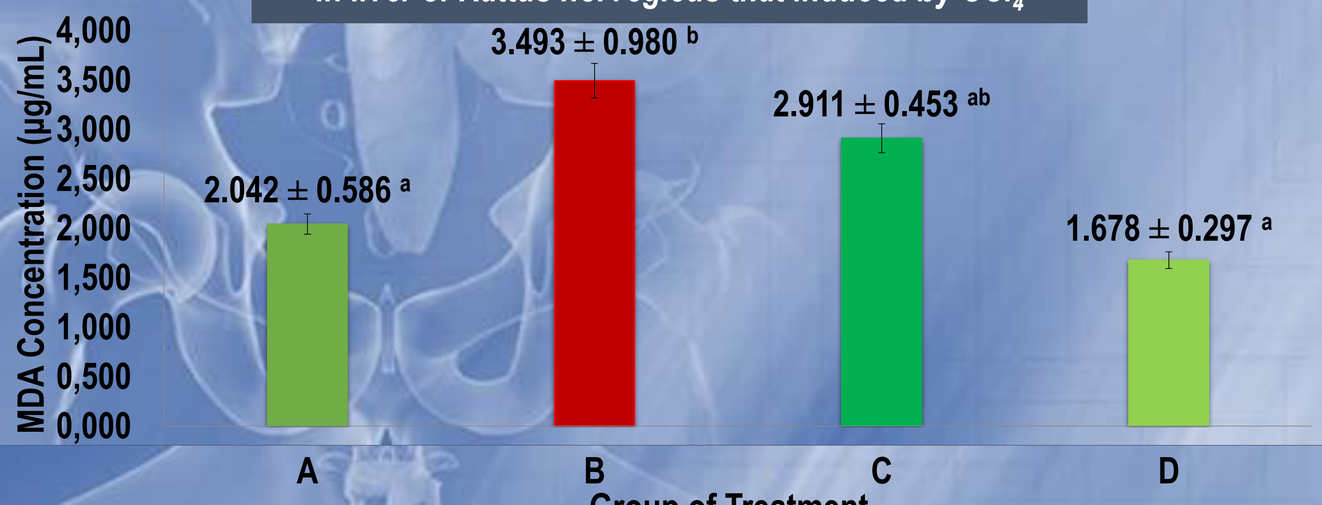
- ✓ It is hepatotoxin so it can disorder hepatocyte [1].
- ✓ It is a compound that produced radicals.
- ✓ It was hepatotoxic metabolite that metabolism by cytochrome P-450 enzyme [2].
- ✓ Carbon tetrachloride is also pathogen, so it enhance oxidative stress in hepatocyte that effected by lipid peroxidation until cause liver cancer [3].



- ➢ A bioactive on *Curcuma xanthorrhiza* rhizome is secondary metabolite compound.
- ➢ It has pharmacology effects as antioxidant and antihepatotoxic [4] to prevent and to protect liver disorder that caused by toxic from xenobiotic compounds, such as CCl_4 [5].
- ➢ As antioxidant, it decreasing the level of oxidative disorder in cell effectively.
- ➢ It was also obstructed Reactive Oxygen Species (ROS) accumulation effectively by *in vitro* or it avoid production of free radicals in lipid peroxidation, and prevent lipid accumulation in hepatocyte [6].

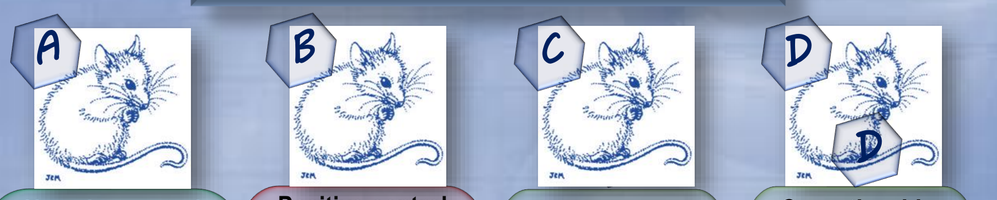
RESULTS

Influence of Curcuma xanthorrhiza rhizome ethanol extract therapy to malondialdehyde (MDA) concentration in liver of Rattus norvegicus that induced by CCl_4

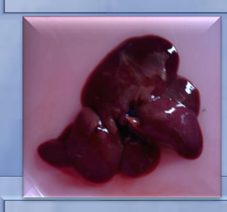


[a] not significance different, [b] significance different. The difference of notation showed the presence of significance difference in intergroup ($p < 0,05$).

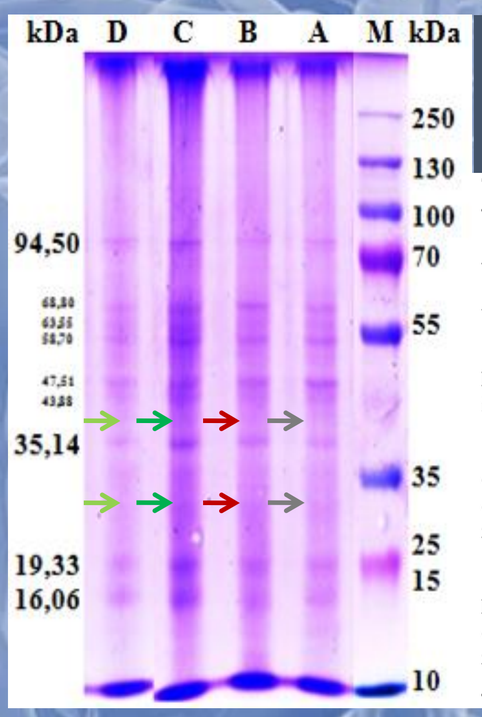
MATERIALS AND METHODS



Malondialdehyde (MDA) assay by *Thiobarbituric Acid* (TBA) test method.



- Protein Extraction.
- Protein Analysis by *Sodium Dodesil Sulphate-Polyacrylamide Gel Electrophoresis* (SDS-PAGE) method.



Influence of Curcuma xanthorrhiza rhizome ethanol extract therapy to protein profile in liver of Rattus norvegicus that induced by CCl_4

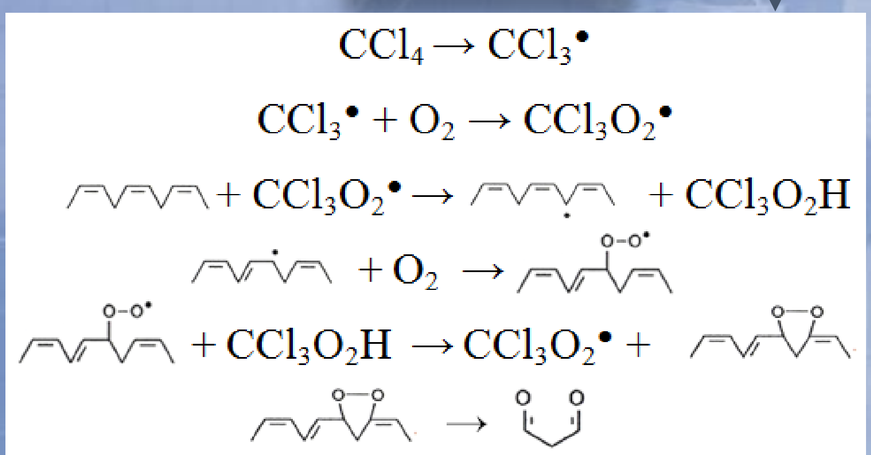
Table 2. Interpretation of liver protein molecular weight in *Rattus norvegicus*.

Group	Molecular Weight of Liver Protein (kDa)								
	94.50	68.80	63.55	58.70	47.51	43.88	35.14	19.33	16.06
A (Negative control (normal))	√	√	√	√	√	√	√	√	√
B (Positive control (CCl_4 10% induced))	√	√	-	√	√	-	√	√	√
C (*Curcuma xanthorrhiza* rhizome ethanol extract therapy dosage of 400 mg/kg BW)	√	√	√	√	√	√	√	√	√
D (*Curcuma xanthorrhiza* rhizome ethanol extract therapy dosage of 800 mg/kg BW)	√	√	√	√	√	√	√	√	√

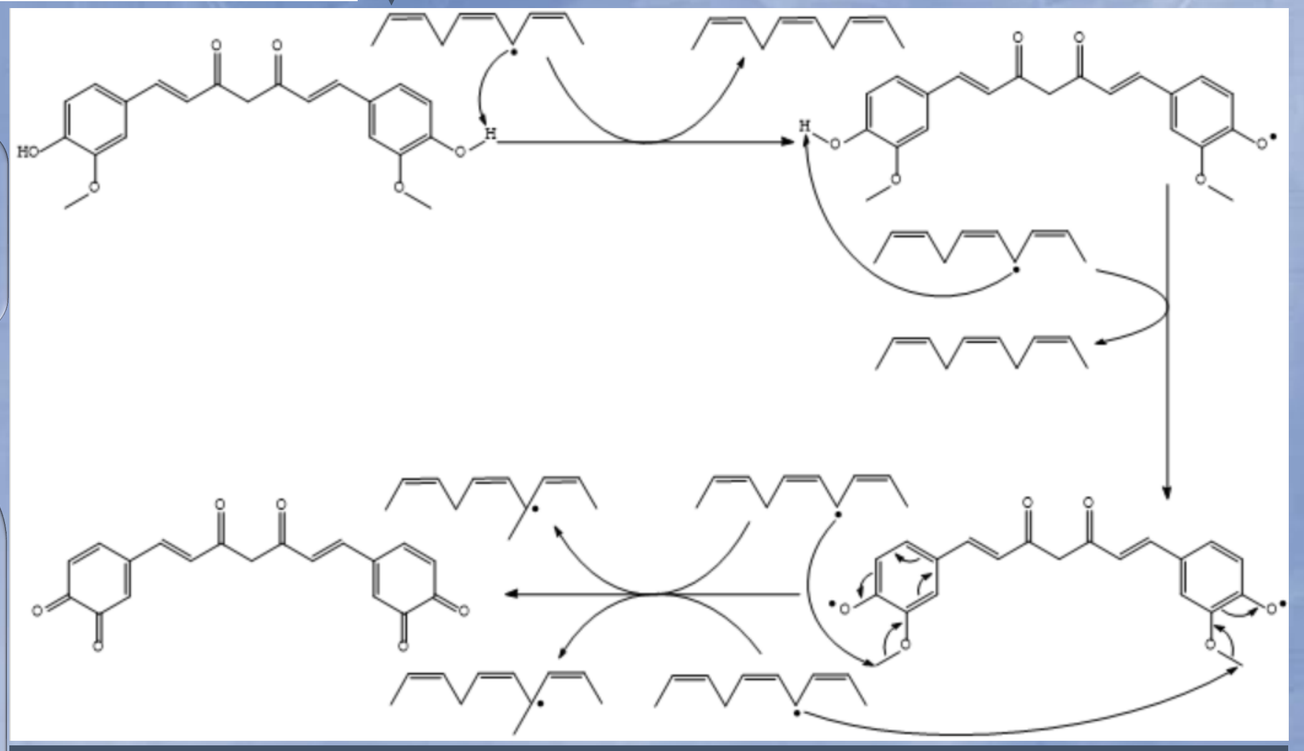
DISCUSSION

$$CCl_4 \rightarrow CCl_3^{\bullet}$$

$$CCl_3^{\bullet} + O_2 \rightarrow CCl_3O_2^{\bullet}$$



Mechanism of lipid (PUFA) peroxidation reaction by CCl_4 which entered into body form malondialdehyde (MDA).



Mechanism of free radical scavenger reaction by antioxidant in bioactive on ethanol extract of Curcuma xanthorrhiza rhizome.

CONCLUSIONS

- ❖ Bioactive on *Curcuma xanthorrhiza* rhizome ethanol extract dosage of 400 mg/kg BW and 800 mg/kg BW as hepatoprotector, it improves oxidative disorder in liver tissue.
- ❖ Both of them able to decrease malondialdehyde (MDA) concentration and able to improve liver protein profile with molecular weight 63.55 kDa (Hsp60) and 43.88 kDa (Hsp27) which effected stress oxidative by CCl_4 induced.

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