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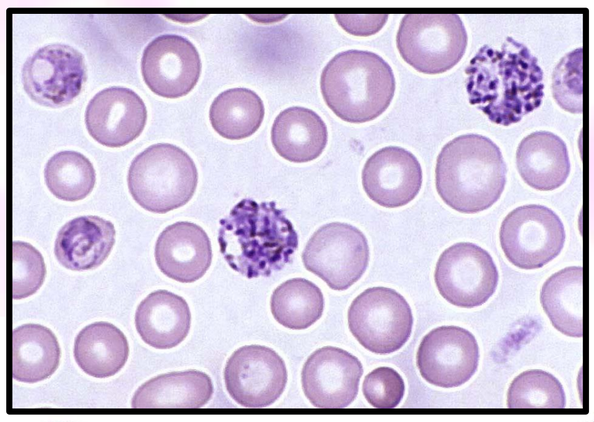
Trichosanthes cucumerina AS A PROMISING NON-TOXIC ANTIMALARIAL AGENT AGAINST *Plasmodium berghei* NK65 IN ANIMAL MODEL



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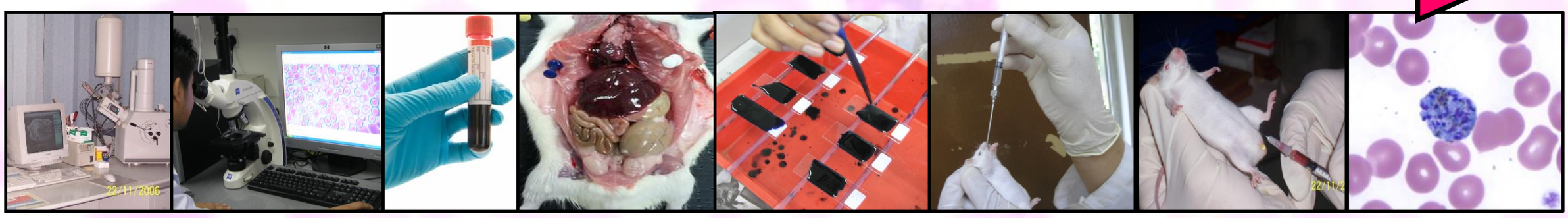
INTRODUCTION

Malarial etiological agents were reported to be resistant against nearly all current antimalarial drugs. This study demonstrated how natural planted vegetable, *Trichosanthes cucumerina* (snake gourd) promisingly can solve manifestation of malaria in animal model. Four days suppression test (4DST) in *Plasmodium berghei* NK65-infected male ICR strain mice showed that the inhibition rate of the mice group treated at 14 days pre-infection treatment with 100 mg/kg bw *T. cucumerina*-sd$H_2$0 extract was >80 % and they survived more than 7 months post-infection. Biochemical tests were significantly situated in the normal ranged and histologically, no abnormalities found on the selected vital organs. This study evidenced that *T. cucumerina* could be manipulated as a potential antimalarial alternative drug for the preservation and welfare of human being.

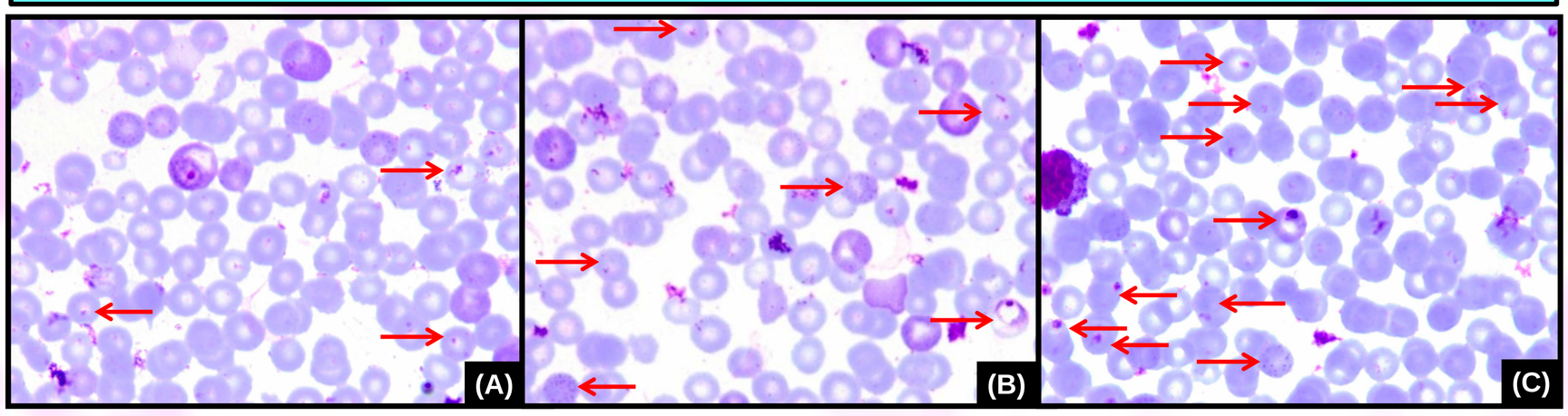
METHODOLOGY

Trichosanthes cucumerina



RESULTS

The Giemsa thin blood smear of the mice treated with 0.2 mL 100 mg/kg bw *T. cucumerina*-sdH_2O extract in the mice from group PRE14 (A), CUR3 (B) and LTN (C) where the slide were taken on Day 4 post-infection. The red arrows indicated the mice RBC being infected with *P. berghei* NK65 at all parasite's life cycle stages: immatured trophozoite (ring stage), matured trophozoite, schizont and gametocyte.



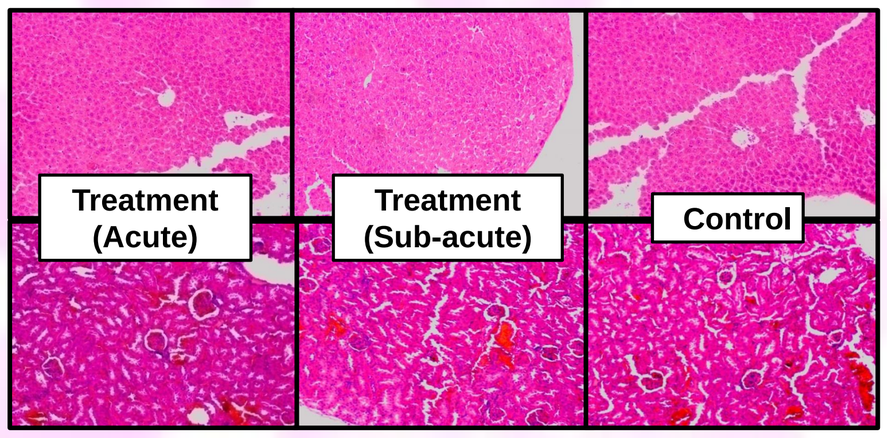
Inhibition Rate (%) on D4 post-infection and Survival Time (Day) of the mice treated with 100 mg/kg bw *T. cucumerina*-sdH_2O extract

Regime	Group	Inhibition Rate (%)	Survival Time (Day)
Preventive	PRE14	83.60 ± 1.03	226.15 ± 2.14
	PRE7	58.61 ± 1.71	162.77 ± 0.99
	PRE3	47.77 ± 2.09	128.09 ± 1.15
Curative	CUR3	36.65 ± 0.87	90.26 ± 1.07
	CUR4	24.08 ± 0.59	57.60 ± 0.65
	CUR5	19.74 ± 1.23	35.44 ± 2.08
Control	POS	100	>360
	NEG	6.02 ± 2.11	19.48 ± 0.06
	LTN	5.84 ± 1.06	17.79 ± 1.20

Blood enzyme & biochemical values for toxicity assessment

Test	TA	TB	TC	TD	CN	CL	NR	Unit
ALT	41.81 ± 2.14	45.20 ± 1.13	67.57 ± 2.91	90.03 ± 2.02	41.03 ± 3.91	44.83 ± 1.11	40 – 93	IU/L
AST	133.13 ± 2.04	125.93 ± 2.12	167.11 ± 2.27	187.01 ± 2.09	111.62 ± 1.19	134.43 ± 4.01	92 – 206	IU/L
ALP	62.76 ± 2.33	59.4 ± 2.97	69.2 ± 2.90	68.03 ± 2.10	61.46 ± 2.46	58.32 ± 2.97	54 – 115	IU/L
STP	6.12 ± 2.32	7.21 ± 3.81	7.93 ± 2.01	8.83 ± 3.90	6.40 ± 1.01	6.80 ± 3.06	5.8 – 9.5	g/dL

Liver & kidney histopathology stains for toxicity assessment



DISCUSSIONS

- The action of Pheniprazine molecule in *T. cucumerina* against –thiol group of parasite enzymes which is crucial for parasite proliferation (Devi, 2017)
- Bivittoside in *T. cucumerina* inhibited enzymes for stability of the redox reaction in protozoan cells (alcohol dehydrogenase & cysteine proteinase) (Sandhya, 2010)
- At 10 and 50 mg/kg bw, it could be the best concentration for *T. cucumerina* to kill and inhibit the growth of *Plasmodium* spp in infected host

CONCLUSION

T. cucumerina has a promising antimalarial activity and could be manipulated for the welfare of both animal and human, as well as for environmental sustainability. Future works is required to determine the effectiveness of antimalarial properties of the plant.

REFERENCES

- Devi, N. (2017). Medicinal Values of *Trichosanthes cucumerina L*. (Snake Gourd) - A Review. *British Journal of Pharmaceutical Research*, 16(5), 1-10
- Sandhya S.V. (2010). An Updated Review On *Tricosanthes cucumerina*. 2:56-58
- Wykes N. (2009) What Have We Learnt From Mouse Models For The Study Of Malaria. *European Journal of Immunology* 39(8):3-7