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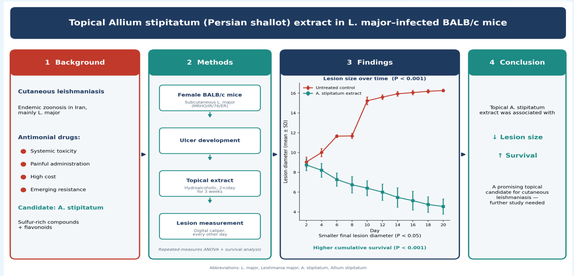
Evaluation of the Therapeutic Effect of Allium stipitatum Hydroalcoholic Extract on Leishmania major Cutaneous Lesions in Balb/c Mice

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Backgrounds

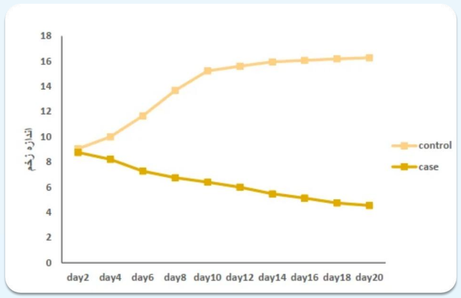
Cutaneous leishmaniasis is an endemic zoonotic parasitic disease in Iran caused predominantly by Leishmania major. Current antimonial regimens present substantial limitations, including systemic toxicity, painful administration, high costs, and emerging parasite resistance. Persian shallot (Allium stipitatum) contains sulfur-rich compounds and flavonoids that may have biological activities relevant to infection and tissue repair. This experimental study aimed to investigate the in vivo wound-healing effects of A.stipitatum hydroalcoholic extract on lesion progression and survival in BALB/c mice experimentally infected with L. major.

Methods

Female BALB/c mice were subcutaneously infected with Leishmania major promastigotes (MRHO/IR/76/ER). After ulcer development, the treatment group received topical A. stipitatum hydroalcoholic extract twice daily for 3 weeks. Lesion diameters were measured every other day using a digital caliper. Data were analyzed using repeated-measures ANOVA and cumulative survival analysis.

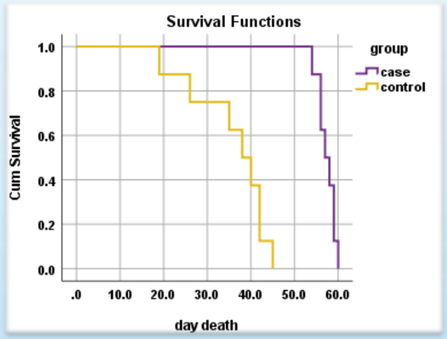


Findings



Ulcer diameters in the untreated control group increased steadily, whereas mice receiving topical A. stipitatum extract showed a statistically significant reduction in lesion size over time ($P < 0.001$). Final mean lesion diameter was significantly smaller in the extract-treated cohort than in controls ($P < 0.05$). In addition, cumulative survival rates post-intervention was significantly higher in the treated group compared to controls ($P < 0.001$).

Day	Case (Mean ± SD)	Control (Mean ± SD)	P
2	8.75 ± 0.58	9.05 ± 0.51	P < 0.001
4	8.21 ± 0.70	10.00 ± 0.43	
6	7.28 ± 0.68	11.66 ± 0.15	
8	6.75 ± 0.83	11.68 ± 0.27	
10	6.40 ± 0.76	15.23 ± 0.40	
12	6.00 ± 0.83	15.60 ± 0.25	
14	5.47 ± 0.99	15.94 ± 0.25	
16	5.14 ± 0.96	16.06 ± 0.23	
18	4.75 ± 0.80	16.19 ± 0.19	
20	4.55 ± 0.77	16.27 ± 0.15	



Overall Comparisons

	Chi-Square	df	Sig.
Log Rank (Mantel-Cox)	16.494	1	0.000

Test of equality of survival distributions for the different levels of group.

Conclusion

Topical administration of hydroalcoholic A. stipitatum extract was associated with reduced lesion size and improved survival in BALB/c mice experimentally infected with L. major. These findings suggest that the extract requires further investigation as a potential topical treatment candidate for cutaneous leishmaniasis, building on previous experimental evidence of antileishmanial activity from another Allium species.

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References

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