

New Topical Bioadhesive Amphotericin-B Formulations with Potential Application on Cutaneous Leishmaniasis Treatment. Stability and Preliminar *In-vivo* Performance Evaluations [†]

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Abstract: Cutaneous leishmaniasis (CL) is an endemic parasitic disease in Latinoamérica. Currently, high cost, toxicity, and adverse events incidence of available treatments contribute to high morbidity. Systemic amphotericin-B (AmB) is recommended in resistant infections, but poor solubility, permeability, and stability are conditioning factors for its formulation. This work is focused on the formulation of new topical dosage forms containing AmB based on ternary interpolyelectrolyte complexes (IPEC) with hyaluronic acid and chitosan. From IPEC, 3 formulations were prepared to contain AmB (0.1%), 1 hydrogel, and 2 spray forms, using arginine or lecithin as an absorption enhancer or humectant. The quality attributes of formulation were assayed by dynamic/oscillatory rheometry, texturometry, extensibility/sprayability, and HPLC/UV determinations. All formulations presented appropriate physical-mechanical and adhesive behaviors to facilitate the application, coverage, and permanence of the skin. The IPEC and formulations showed increased stability compared to AmB solution, and their antifungal activity (MIC₅₀/MFC) against *C. albicans* (SC5314), was not modified for IPEC nor by the passage of time. Evaluations of topical lesions on murine models showed similar efficacy of formulation concerning the systemic reference. Lecithin contains' formulation showed a loss of effectiveness. These results suggest bioadhesive topical modified-release IPEC-based formulations of AmB are interesting, efficient, and accessible alternatives for optimizing CL treatment.

Keywords: cutaneous Leishmaniasis; Amphotericin B; Interpolyelectrolyte complexes.

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Conflicts of Interest

The authors declare no conflict of interest.