



## Formulation Development and Characterization of Topical Itraconazole Microemulsion-Organogels

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**SUMMARY.** This study aimed to formulate itraconazole (ITZ) in the form of microemulsion-organogels (MOGs) using Tween80 and Span80 as nonionic surfactant blend. The investigated natural oils were rice bran oil (RBO) and palm oil (PO). The studied cosolvent was propylene glycol (PG). The pseudoternary phase diagrams were constructed by aqueous titration method to determine microemulsion (ME) region. ITZ solubility in each component and in MEs was measured. MOGs were prepared by mixing fumed silica into the selected MEs and then evaluated for physical properties and chemical stability. It was found that both oils provided quite similar ME formation; however, RBO dissolved ITZ better than PO. PG could enhance ME formation. MEs could increase ITZ solubility compared to each component. ITZ-MOGs composed of 0.1% w/w ITZ as an active, 1:1 Tween80:Span80 as surfactant mixture, RBO as an oil phase, 1:1 water:PG as an aqueous phase, and fumed silica as a gelling agent could be prepared. An obtained formulation (ITZ-RMOG-3) was physically desirable and chemically stable at room temperature for 5 weeks.

**RESUMEN.** Este estudio tuvo como objetivo formular itraconazol (ITZ) en forma de microemulsión-organogeles (MOG) utilizando Tween80 y Span80 como mezcla de tensioactivos no iónicos. Los aceites naturales investigados fueron aceite de salvado de arroz (RBO) y aceite de palma (PO). El cosolvente estudiado fue propilenglicol (PG). Los diagramas de fase pseudoternarios se construyeron mediante el método de titulación acuosa para determinar la región de microemulsión (ME). Se midió la solubilidad de ITZ en cada componente y en ME. Los MOG se prepararon mezclando sílice en las ME seleccionadas y luego se evaluaron las propiedades físicas y la estabilidad química. Se encontró que ambos aceites proporcionaban una formación de ME bastante similar; sin embargo, RBO disolvió ITZ mejor que PO. PG podría mejorar la formación ME. ME podría aumentar la solubilidad ITZ en comparación con cada componente. Se preparó ITZ-MOGs compuesto de 0,1% w/w de ITZ con Tween 80:Span80 y 1:1 como mezcla tensioactiva, RBO como fase oleosa, agua 1:1 PG como fase acuosa y sílice como agente gelificante. La formulación obtenida (ITZ-RMOG-3) era físicamente aceptable y químicamente estable a temperatura ambiente durante 5 semanas.

**KEY WORDS:** antifungal drug, itraconazole, microemulsion, microemulsion-organogel.

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