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Effect of Thymoquinone on Everolimus-Induced Oral Toxicity in Rats. A Macroscobic and Biochemical Evaluation

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SUMMARY. **Everolimus is a drug within the class of mammalian target of rapamycin inhibitors (mTOR). The most widespread side effect observed is oral mucositis.Thymoquinone is a phenolic compound obtained antioxidant and anti-inflammatory activities. The aim of this study is to investigate the protective effect of thymoquinone against oral toxicity that may develop due to everolimus in rats. Albino Wistar male rats were divided into healthy(HG), everolimus(EVR), thymoquinone(TQG) and thymoquinone+everolimus(TQE) groups. Thymoquinone (20 mg/kg) was administered to the TQG and TQE groups orally. One h after , TQE and EVR groups were given everolimus to (2 mg/kg) the stomach. This procedure was repeated once a day for four weeks. After 4 weeks, animals were euthanized, tongue and cheek tissues were examined biochemically and histopathologically. Thymoquinone prevented the increase of oxidant and proinflammatory cytokines and the decrease of antioxidants in the tongue and cheek tissues of animals, and also reduced the histopathological damage.**

RESUMEN. Everolimus es un fármaco dentro de la clase de inhibidores de rapamicina diana en mamíferos (mTOR). El efecto adverso más generalizado observado es la mucositis oral. La timoquinona es un compuesto fenólico que obtiene actividades antioxidantes y antiinflamatorias. El objetivo de este estudio es investigar el efecto protector de la timoquinona contra la toxicidad oral que puede desarrollarse debido al everolimus en ratas. Las ratas macho albinas Wistar se dividieron en grupos sanos (HG), everolimus (EVR), timoquinona (TQG) y timoquinona + everolimus (TQE). Se administró timoquinona (20 mg/kg) a los grupos TQG y TQE por vía oral. Una hora después, los grupos TQE y EVR recibieron everolimus (2 mg/kg) en el estómago. Este procedimiento se repitió una vez al día durante cuatro semanas. Después de 4 semanas, los animales fueron sacrificados, los tejidos de la lengua y la mejilla fueron examinados bioquímica e histopatológicamente. La timoquinona evitó el aumento de citocinas oxidantes y proinflamatorias y la disminución de antioxidantes en los tejidos de la lengua y las mejillas de los animales, y también redujo el daño histopatológico.

KEY WORDS: everolimus, oral mucositis, rats, thymoquinone.

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