

Research Article

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Acute and repeated dose 60-day oral toxicity assessment of chemically characterized *Berberis hispanica* Boiss. & Reut in Wistar rats

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Abstract: *Berberis hispanica* Boiss. & Reut (*B. hispanica*) belongs to the family Berberidaceae, which is currently used in traditional medicines. This article aimed to study the phytochemical composition and acute and subacute toxicity of *B. hispanica* extract in rats. The phytochemical composition of *B. hispanica* extract was characterized using GC-MS. The acute toxicity was investigated *in vivo* via the oral administration of single doses including 400, 800, 1,000, 1,200, and 1,400 mg/kg for 14 days. The subchronic toxicity was studied through oral administration of 400 mg/kg for 60 days. The findings of the phytochemical

analysis of *B. hispanica* extract showed the presence of various phytochemical compounds. Acute toxicity results revealed serious clinical symptoms and mortalities in rats treated with 800 mg/kg up to a maximum of 1,400 mg/kg. With acute toxicity, subchronic toxicity results showed also serious signs of toxicity including biochemical and histological alterations in animals treated with 1,400 mg/kg. *B. hispanica* extract revealed to be toxic in rats orally treated under both subacute (>400 mg/kg) and subchronic toxicity conditions (400 mg/kg). The outcome of this study serves the society as it provides toxicological evidence of *B. hispanica* used in alternative medicines

Keywords: *Berberis hispanica* Boiss. & Reut, toxicity, biochemical parameters, histopathology, chemical characterization

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1 Introduction

Herbal medicines have been seen as an exhaustive source of therapeutic agents for many years ago. Nowadays, several developed drugs come from natural products or their derivatives [1]. The use of plants in traditional medicines for disease treatment goes back thousands of years ago. About 80% of people around the world use folk medicines for medication purposes. This huge use could be explained by the fact that most people based in developing countries have no access to modern medicine [2]. Moreover, 25% of prescription drugs used in the United States between 1959 and 1980 were derived from the plant kingdom [3], and about 60% of prescriptions in European countries come also directly or indirectly from plants [4]. The use of the traditional herbal practice can be explained by many reasons such as the high cost of advanced medicines, sociocultural practices of users, and the need for controlling resistant pathogens using natural alternative agents [4,5].

Nowadays, modern medicine has focused on natural products as unexhausted sources for drug production.