

Study of the effect and antimicrobial activity of some pigmented plant extracts on the growth of Gram-positive and Gram-negative bacteria

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Abstract: Three plant extracts, roselle (*Hibiscus Sabdariffa*), sumac (*Rhus coriaria*), and *Juglans regia* bark, were tested for antibacterial efficacy against diverse bacteria isolates. The study's aims were to examine and evaluate the biological activity of three pigmented medicinal plants' aqueous and alcoholic crude extracts against pathogenic and non-pathogenic bacteria *in vitro*. as well as testing the cytotoxicity of crude extracts. A well diffusion method was used to complete the primary screening on Gram positive and Gram-negative isolates, both extracts [aqueous and alcoholic] had a broad-spectrum impact while alcoholic extracts had the greatest effect. However, both extracts had varied effects against all bacterial strains at the minimal inhibitory concentrations. The two extracts had a bactericidal effect, and the growth of all bacteria in this investigation was monitored for seven days with no growth. The extracts' cytotoxic effect on red blood cells (RBCs) was assayed, the result showed no cytotoxicity in the absence of alcohol with the only lysis occurring in the 200 mg/ml concentration tube of the alcoholic extract of sumac (*Rhus coriaria*). Thus, the three plants may be used as a source of natural bactericidal agent safely.

Keywords: Medicinal plants, antimicrobial effect, aqueous extract, alcoholic extract, cytotoxicity

1. INTRODUCTION

Plants that have therapeutic capabilities or have a pharmacologically helpful effect on the human body are known as medicinal plants. Alkaloids, terpenes, sterols, flavonoids, glycosides, cyanogenic, saponins, tannins, lactones, resins, volatile oils, quinines, and other secondary metabolites are synthesized and accumulated spontaneously (Motaleb et al., 2011). Lanier (2020) referred to herbal medicine; is the use of certain herbs and the plant-based parts such as; flowers, stems, leaves, roots, etc., to the heal of various illnesses. It was the only option during the ancient times, although there are many different ways to the treatment of an illness in today's day in age.