

## **A STORY ABOUT *Portulaca oleracea*: DESCRIPTION, METHODOLOGY OF OBTAINING BIOACTIVE EXTRACTS, AND THEIR POSSIBLE USE IN MEDICINE AND COSMETICS**

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**Abstract.** *Portulaca oleracea*, or purslane, is a spontaneous plant from the succulent family with an extensive history and rich possibilities for exploitation in the nutrition, medicine, and cosmetic industries. Written historical sources attest to the plant's use as a remedy for gum parodontal injuries and as a topical antimicrobial in the healing of wounds, but also with psychoactive sedative effect. In traditional medicine, purslane is used as a source of nutrients and as a good remedy against diarrhea and gastrointestinal infections. This paper aims to present more details about this potential of the well-known *Portulaca oleracea*, as

*reported in the literature in recent years, and to explore possible future directions for exploiting its bioactive potential.*

**Keywords:** *Portulaca*, purslane, medicinal plant, nutrition, cosmetic industry

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## 1. INTRODUCTION

Since the beginning of humankind, plants have been used for their nutritional and medicinal potentials. Significant evidence showed that in the Palaeolithic, human was specifically directed to care about their traumatic injuries and dental disorders, as they could be found by analysing human remains from archaeological sites [1-3]. Also, bags, pots, tools, and grinding stones found during excavations suggested auto-medication as often as feeding [1]. Moreover, evidence dating from the Neolithic period supported the hypothesis that pre-modern humans already had knowledge about and consistently used psychotropic plants, such as *Cannabis* and *Papaver* [1]. Despite these, written sources of evidence on the use of plants for medical purposes do not date to earlier than 5000 BC, i.e. to the Sumerian civilization, Antic Chinese Empire, and Indian, Egyptian, and Jewish civilizations [2].

*Portulaca oleracea* is a spontaneous annual flowering plant that can be found in both warm and cold climates throughout the globe. As a part of the succulent family, *Portulaca oleracea* is a small plant, whose decumbent stem often not reaches 30 cm in height [4]. The succulent-typical leaves are smooth and mostly rounded, while the flowers are 5-typed and yellow, with slight differences according to the geographical location. Due to being covered in a thick layer of wax, the aerial parts are resistant to pests. The tiny black seeds are found in capsules. Purslane could be easily cultivated on any type of soil, yet they are dependent on humidity, sunlight, and temperatures (above 25 °C). Also, purslane is closely related to *Portulaca grandiflora*, often found as an ornamental plant in our country and in many parts of Europe, Asia, and America [4].

In many places, the presence of purslane is closely correlated to anthropic factors, being edible both wild and cultivated [5]. Due to this aspect and as part of the major plant family of succulents, *Portulaca oleracea* has an extensive history. Evidence dating to ancient period certifies the use of the seeds and leaves for food (both human and animal) and medicines [6]. Salads, soups, and stews were often prepared from purslane aerial parts, while bread could be obtained from ground seeds; teas and infusions were used for treating gastrointestinal disorders [7]. Modern times, however, allowed the development of valorising the potential of plants for their active compounds in medicine and other biotechnological branches, such as the cosmetic products industry.