IOP Conference Series:
Earth and
Environmental Science

PAPER • **OPEN ACCESS**

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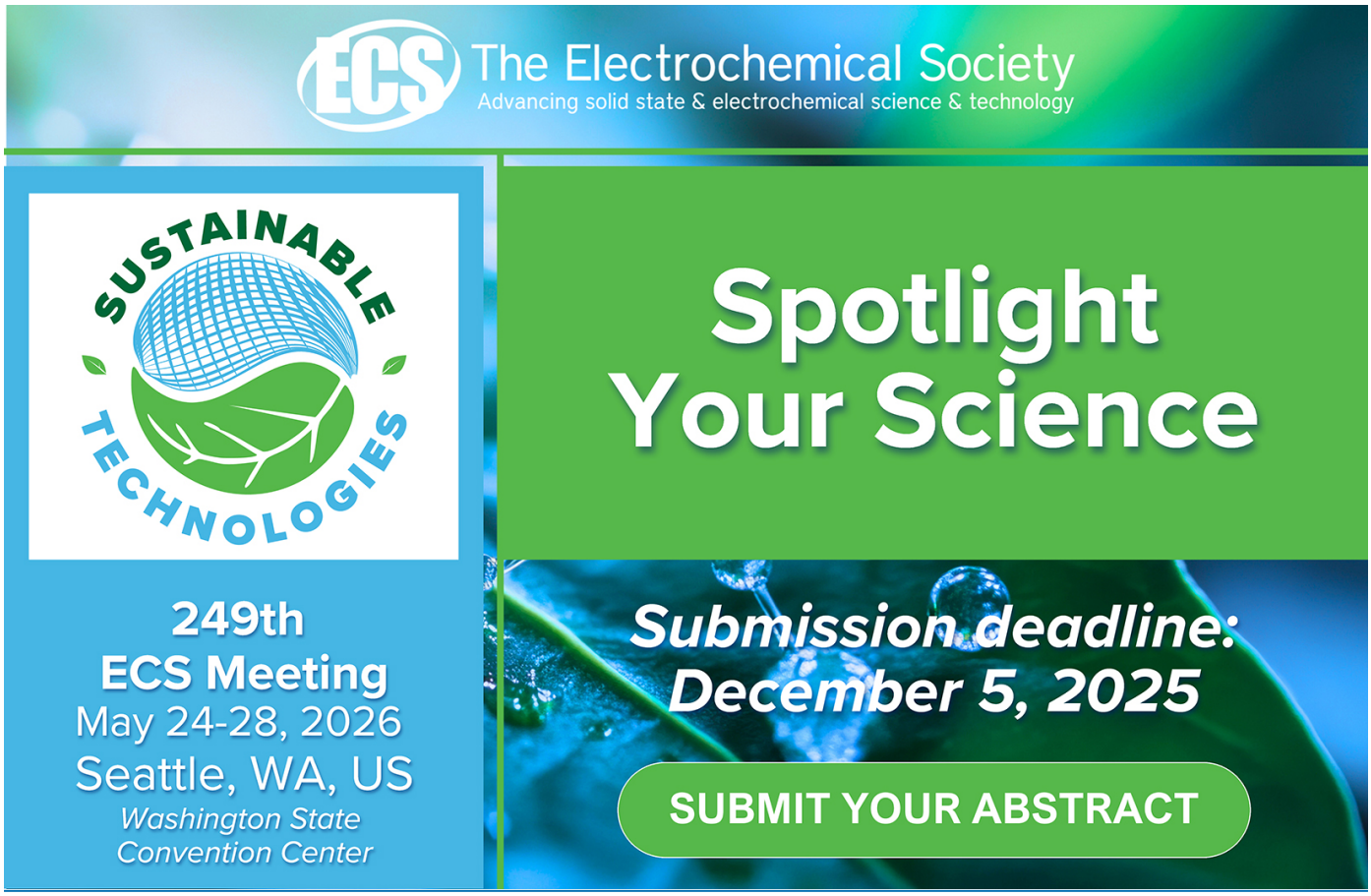
To cite this article: M K Ne'ma *et al* 2025 *IOP Conf. Ser.: Earth Environ. Sci.* **1538** 012028



The Impact of Sage Extract and Tryptophan Spraying on some Growth Qualities and Active Chemicals in Chaste Tree Plant *Vitex agnus-castus* L.

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Abstract. This study was cary out to determine the effect of the aqueous extract of sage(M) (0, 25, 50) g L^{-1} and Tryptophan (T) (0, 100, 200) mg L^{-1} on the growth indicators, chemical properties, and active compounds of the (*Vitex agnus-castus* L.). The study was conducted in the canopy of the gardens unit of the College, at the Karmat Ali location, during the 2023-2024 agricultural season. Three applications were administered, with a 21-day interval between each application. The findings indicated that the application of sage at 50 g L^{-1} significantly enhanced the total soluble carbohydrate and total carotene levels in the leaves. The application of Tryptophan at a dosage of 200 mg L^{-1} significantly enhanced the total leaf count and overall chlorophyll content in the leaves. The interaction of sage extract at 50 g L^{-1} with Tryptophan at concentrations of 100 or 200 mg L^{-1} (T1M2 or T2M2) significantly affected plant height, achieving measurements of 115.55 and 115.11, respectively. The leaf concentrations of total soluble carbohydrates and total chlorophyll were elevated in the interaction between T2M2, averaging 303.75 mg g^{-1} dry weight and 128.09 mg 100 g^{-1} fresh weight, respectively. The total carotene concentration in the leaves rose in the interaction between T0M2 and T2M2, averaging 7.11 and 6.97 mg 100 g^{-1}, respectively. GC-MS results indicated that the principal active compounds in the methanolic extract of Chasteberry leaves were Eucalyptol and Trimethyl-2-cyclohexenone 2,4-dinitrophenylhydrazone -3,5,5, The percentages of these two chemicals varied according to the treatments.

Keywords : Sage extract,Tryptophan,*Vitex agnus-castus* L.,vegetative growth, chemical properties, GC-MS

1. Introduction

Vitex agnus-castus L. is an attractive species within the Verbenaceae family. It holds significant landscaping value in gardens. It is an exquisite shrub that attains a height of 6 to 7 meters. It is located along riverbanks throughout southern Europe, the Mediterranean region, Central Asia, and the Middle East. The leaves are palmately compound, comprising five to seven leaflets that resemble digits [1]. It is referred to as the Virgin's fingers. The little blooms are arranged in inflorescences that are either white or pale blue. The fruit consists of a dark pulp. This plant is widely recognised for its prevalence in the Iraqi ecosystem. The plant possesses therapeutic properties due to its various active constituents, primarily flavonoids, glycosides, terpenes, tannins, phenols, carbohydrates, saponins, and volatile oil [2]. It is utilised for the treatment of acne and infertility [3]. Studies have shown that the leaves of the chasteberry plant are distinguished by their content of active substances, as they contain total carotenoids amounting to 20.81 µg/g and phenols