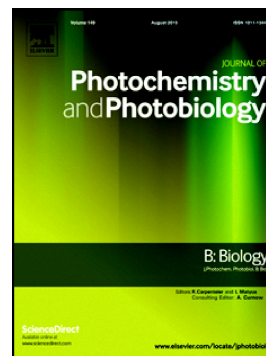


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Analytical determination of the reducing and stabilization agents present in different *Zostera noltii* extracts used for the biosynthesis of gold nanoparticles

Rafael Zarzuela^a (rafael.zarzuela@uca.es), **Manuel Jesús Luna^a** (manuel.luna@uca.es), **María Luisa Almoraima Gil^{*a}** (almoraima.gil@uca.es), **María Jesús Ortega^b** (mariajesus.ortega@uca.es), **José María Palacios-Santander^{c,e}** (josem.palacios@uca.es), **Ignacio Naranjo-Rodríguez^{c,e}** (ignacio.naranjo@uca.es), **Juan José Delgado^{d,e}** (juanjose.delgado@uca.es), **and Laura María Cubillana-Aguilera^{c,e}** (laura.cubillana@uca.es)

^aDepartamento de Química Física, ^bDepartamento de Química Orgánica ^cDepartamento de Química Analítica, ^dDepartamento de Ciencias de los Materiales, Ingeniería Metalúrgica y Química Inorgánica ^eInstituto de Microscopía Electrónica y Materiales (IMEYMAT).

Facultad de Ciencias, Universidad de Cádiz, Avda. República Saharaui, S/N. 11510 - Puerto Real (Cádiz), Spain.

Abstract

The objective of this work was to ascertain the nature of the components responsible for the reducing and stabilizing properties of *Zostera noltii* extracts that lead to gold nanoparticle formation using chemical techniques of analysis. In order to achieve this aim, we try the synthesis of AuNPs with three different extracts from plants collected in the Bay of Cádiz (Spain). The n-butanol extract produced the best results. Taking this into account, four fractions were isolated by Sephadex LH-20 column chromatography from this extract and we studied their activity. The chemical study of these fractions led to the isolation of several flavone sulfates and these were identified as the species' responsible for the formation and stabilization of the AuNPs. Flavone sulfates were purified by high performance liquid chromatography and the structures were established by means of spectroscopic methods nuclear magnetic resonance and mass spectroscopy. AuNPs have an average lifetime of about 16 weeks. Additionally, the morphology and crystalline phase of the gold nanoparticles were characterized by transmission electron microscopy. The composition of the nanoparticles was evaluated by electron diffraction and energy

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