

1 Radical Scavenging of White Tea and Its Flavonoid Constituents by 2 Electron Paramagnetic Resonance (EPR) Spectroscopy

3 Nurul A. M. Azman,^{†,‡} Sara Peirò,[†] Lluís Fajari,[#] Luis Julià,^{*,#} and Maria Pilar Almajano^{*,†}

4 [†]Chemical Engineering Department, Technical University of Catalonia, Av. Diagonal 647, 08028 Barcelona, Spain

5 [‡]Chemical and Natural Resources Engineering Department, University of Malaysia, Pahang, 26000 Pahang, Malaysia

6 [#]Biological Chemistry and Molecular Modelling, Institute of Advanced Chemistry of Catalonia (CSIC), Jordi Girona 18-26, 08034
7 Barcelona, Spain

8 **ABSTRACT:** White tea (WT) presents high levels of catechins, which are known to reduce oxidative stress. WT is the least
9 processed tea, unfermented and prepared only from very young tea leaves. The subject of this paper is the use of the spin trap
10 method and electron paramagnetic resonance (EPR) spectroscopy as the analytical tool to measure, for the first time, the radical
11 scavenging activity of WT and its major catechin components, epicatechin (EC), epicatechin-3-gallate (ECG), epigallocatechin
12 (EGC), and epigallocatechin-3-gallate (EGCG), against the methoxy radical, using ferulic acid as antioxidant pattern. The
13 antioxidant activity has been measured by the decrease of the intensity of the spectral bands of the adduct DMPO–OCHH₃ in
14 the EPR with the amount of antioxidant in the reactive mixture. Tea leaves and buds were extracted with waterless methanol. It
15 has been proved that tea compounds with more antiradical activity against methoxy radical are those with the gallate group,
16 EGCG and ECG.

17 **KEYWORDS:** *white tea, EPR, spin trap, antioxidant activity, radical scavenging*