Chemical Insights into a Bioactive Polyphenolic Extract from Camellia Japonica L. Flower

Humaira Khan*
Department of Environmental, Biological and Pharmaceutical Sciences and Technologies, University of Campania 'Luigi Vanvitelli', Via Vivaldi 43, 81100 Caserta, Italy

Simona Piccolella
Department of Environmental, Biological and Pharmaceutical Sciences and Technologies, University of Campania 'Luigi Vanvitelli', Via Vivaldi 43, 81100 Caserta, Italy

Severina Pacifico
Department of Environmental, Biological and Pharmaceutical Sciences and Technologies, University of Campania 'Luigi Vanvitelli', Via Vivaldi 43, 81100 Caserta, Italy

Abstract:

Camellia genus, belonging to Theaceae family, accounts for a broad range of plant species, among which C. japonica L. is one of the most prominent. Historically, these plants have been used for various applications including ornamental purpose, essential oil and tea production, however its exploration in health-care sector is limited. Therefore, herein we present the detailed study on C. japonica L. flower as medicinal plant and its biological activities.

In this context, C. japonica L. flowers, collected from the botanical garden of the University of Campania (Caserta, Italy), underwent ultrasound assisted maceration in formic acid acidified ethanol, and extract obtained was chromatographed on Amberlite XAD-4 resin to achieve an anthocyanin rich fraction (CjA).

CjA fraction was first chemically investigated using spectroscopic (ATR FT-IR, and UV-Vis) techniques, and then profiled by means of Ultra-High-Performance Liquid Chromatography-High-Resolution Mass Spectrometry (UHPLC-HRMS). The fraction, which consisted in anthocyanins (mostly acylated), procyanidins and flavonols, exhibited a marked antiradical activity. In fact, it massively scavenged DPPH radical and ABTS radical cation, with calculated ID50 values equal to 14.2 and 2.1 µg/mL, respectively. Furthermore, cytotoxicity was assessed employing MTT assay towards tested cancer cells. Thus, it can be concluded that the proposed investigation on bio-profile of phenolic compounds from C. japonica L. flower and its potential bioactivities open new insights for its usage in pharmaceutical sectors.

Keywords:

Camellia japonica, polyphenolic extract, cytotoxicity, antioxidant activity.