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Determination of Total Phenolic, Flavonoid Amounts and Antioxidant Capacity of *Andricus curtisii* (Müller, 1870) Gall

Ayşen URĞUN[1], Özge KILINÇARSLAN[1], Musa AZMAZ[2], Yusuf KATILMIŞ[1], Ramazan MAMMADOV[1]
[1]Department of Biology, Faculty of Arts & Sciences, Pamukkale University, Turkey
[2]Department of Veterinary, Acıpayam Vocational High School, Pamukkale University, Turkey
oklncrsln@pau.edu.tr

Aim of the study: Various degenerative disorders implicate a deficient natural antioxidant defence as their etiological or pathological factor. Plant-based antioxidants potentiate body's antioxidant defence and are relatively safe. The cynipid galls are of great medicinal value and have widely been used in folklore medicines mainly as astringent and against inflammation. Pharmacological evaluation of the galls has deciphered them to be astringent, antiparkinsonian, antitremorine and antidiabetic. In this study, we aim to determine antioxidant capacity and total phenolic-flavonoid amounts of *Andricus curtisii* asexual gall extracts.

Material and Methods: The oak gall specimens on their host were collected from Uşak, Turkey between 2017 and 2018. After collection, the galls were kept in laboratory and checked for emerged adults. The extracts of galls were prepared with the ethanol and water. DPPH radical scavenging method was used to determine antioxidant activity of *A. curtisii* gall. Total phenolic and total flavonoid amounts were carried out respectively, Folin-Ciocalteu method and the aluminium chloride colorimetric method.

Results: The results of this study showed that the highest antioxidant activity, total phenolic content and total flavonoid content were exhibited by the extracts obtained from water extract. The gall extract was found to contain a large amount of polyphenol and possess a potent radical scavenging power. The amount of total phenolics varied in different accessions and ranged from 203.93 to 271.43 mg GAE/g of gall extract. The water extract of *A. curtisii* (40 mg QE/g) have the highest total flavonoid content in quercetin equivalents. In direct proportion, the highest antioxidant activity was also observed in water extracts (IC_{50}: 13.05±1.104). These results indicate that *A. curtisii* can be used as natural antioxidant source in various area.

Keywords: Secondary metabolites, oak gall, Cynipini, Cynipidae.