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**An Investigation on Antioxidant Activity and Total Phenolic-Flavonoid Contents of
Andricus caputmedusae (Hartig, 1843) Gall**

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Aim of the study: In recent days, the pharmacological and medicinal properties of cynipid galls have attracted considerable attention. Previous studies shown that, cynipid gall species have the astringent, anti-inflammatory, local anaesthetic, antipyretic, antiparkinsonian, antidiabetic, antiaging, antioxidant, antibacterial, antiviral, antifungal, larvicidal effects due to their high polyphenolic contents. In this study, the asexual galls of *Andricus caputmeduase* are used for determining their antioxidant capacity and total phenolic-flavonoid amounts.

Material and Methods: The oak gall specimens on *Quercus infectoria* were collected from Afyonkarahisar, Turkey in 2017. After collection, the galls were kept in laboratory. We prepared the gall extracts with water and ethanol. To determine antioxidant activity of this extracts we used DPPH radical scavenging assay. Also, Folin-Ciocalteu method and the aluminium chloride colorimetric method were respectively carried out to estimation of total phenolic and flavonoid contents. Total phenolic and flavonoid expressed respectively as mg gallic acid and quercetin equivalents per gram of extract.

Results: It was found that the galls of *A. caputmedusae* aqueous (IC₅₀: 21.80 ±0.37) and ethanolic (IC₅₀: 25.71±0.49) extracts possessed the highest antioxidant capacities in DPPH radical scavenging activity, and thus could be potential rich sources of natural antioxidants. These extracts presented the highest phenolic content (212.06 and 260.81 mgGAE/g). According to result of total flavonoid amount, 76.74 and 110.32 mgQE/g total flavonoid was determined respectively in water and ethanol extracts. A significant relationship between antioxidant capacity and total phenolic-flavonoid content was found, indicating that phenolic compounds are major contributors to the antioxidant properties of these gall. Further investigations their possible components should be identified and be focused on their potential health benefits and pharmacological effects.

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