

***Cyperus rotundus* tubers resin from Algeria: a promising source of natural antioxidants, anti-inflammatory, and photoprotective compounds**

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Abstract. This study evaluated the properties and potential applications of *Cyperus rotundus* tubers resin, a herbaceous plant native to North Africa, Asia, and Australia. The resin was evaluated for yield, phenolic composition, antioxidant activity, anti-inflammatory potential, and sun protection factor (SPF). Results showed that the resin contained five types of phenolic compounds, namely vanillic acid, gallic acid, caffeic acid, quercetin, and rutin. The resin exhibited significant antioxidant activity in all assays tested, with IC₅₀ values ranging from 0.0638 to 0.454 mg/mL. The SPF value of the resin was determined to be 5.794, suggesting its potential as a sunscreen. The resin also showed significant anti-inflammatory activity in both human serum albumin (HSA) and egg albumin denaturation assays. Overall, the findings of this study suggest that *Cyperus rotundus* tubers resin is a promising source of natural antioxidants and anti-inflammatory compounds. It has the potential to be used in a variety of applications, including food and beverage products, cosmetics, and pharmaceuticals. This study is an important step in understanding the properties and applications of *Cyperus rotundus* tubers resin. The results indicate that this natural product has great potential in a variety of health applications.

Keywords: *Cyperus rotundus*; tubers resin; antioxidant; anti-inflammatory; sun protection factor.

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