



Evaluation of the Antioxidant Activities of Aqueous Extracts of Fresh Madeni Rose Petals

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Introduction

Recently, there is an increasing interest for the use of naturally occurring antioxidants in cosmetic, food, and pharmaceutical applications. Antioxidants have been widely used as food additives to provide protection against oxidative degradation of foods by free radicals.

Madeni rose, Ward Madeni (*Rosa damascena* mill) is a type of Damask rose, which is considered one of the most important economic products of Madinah Al-Monawarah in Saudi Arabia. Fresh Madeni rose petals are suggested to have useful antioxidants properties which carry important health benefits.

Amis

In this study, six different parameters are used to evaluate the ability of fresh Madeni rose petals to act as an antioxidant and free radical scavenger. In addition, the phenolic constituents of Madeni rose petals were determined by high performance liquid chromatography (HPLC).

Methods

Fresh rose petals were prepared as traditionally consumed by Saudi people. The concentration of total phenolics (TPC) was measured by Folin-Ciocalteu method while the concentration of total flavonoid (TFC) was measured by aluminum chloride method. Antioxidant properties of aqueous extracts were evaluated by assaying for DPPH radical scavenging activity, H₂O₂ radical scavenging activity, Ferrous ion chelating ability, and reducing power. The methanolic extract of Fresh Madeni rose petal was analyzed using (Agilent Technologies, California, USA) equipped with diode array detection. HPLC separation was performed on a Pinnacle DB C18 (5 µm, 250 × 4.6 mm, USA).



Figure 1: Fresh Madeni rose petals.

Results

Table 1 Total phenolic and total flavonoid content of aqueous extracts of fresh Madeni rose petals.

Concentration (mg/ml)	Total phenolic content (µg/mg of gallic acid)	Total flavonoid content (µg/mg of catechin)
2.5	118 ± 0.01	--
5	235 ± 0.02	3.1 ± 0.05
10	388 ± 0.01	17.8 ± 1.19

* All values are expressed as mean ± SD for three determinations.

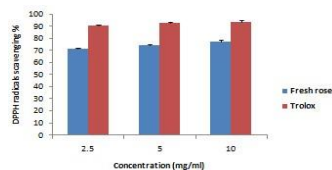


Figure 2: DPPH radicals scavenging activity of different concentrations of fresh Madeni rose petals and Trolox which was used as a standard. All values are expressed as mean ± SD for three determinations. Comparisons of means were made using a one-way ANOVA followed by Tukey post hoc test.

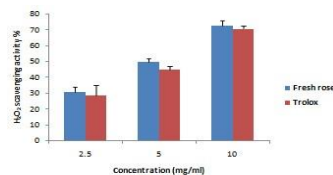


Figure 3: H₂O₂ radicals scavenging activity of fresh Madeni rose petals and Trolox which was used as a standard. All values are expressed as mean ± SD for three determinations. Comparisons of means were made using a one-way ANOVA followed by Tukey post hoc test.

Results - con't

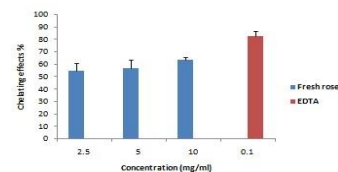


Figure 4: Ferrous ion chelating effects of different concentrations of fresh Madeni rose petals. EDTA at the concentration of 0.1 mg/ml was used as a standard. All values are expressed as mean ± SD for three determinations. Comparisons of means were made using a one-way ANOVA followed by Tukey post hoc test.

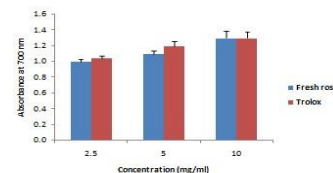


Figure 5: Reducing power of different concentrations of fresh Madeni rose petals and Trolox which was used as a standard. All values are expressed as mean ± SD for three determinations. Comparisons of means were made using a one-way ANOVA followed by Tukey post hoc test.

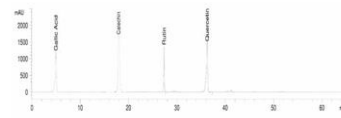


Figure 6: HPLC chromatogram of some standard phenolic compounds.

Results - con't

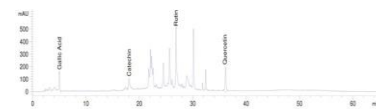


Figure 7: HPLC chromatogram of methanol extract from fresh Madeni rose petals.

Discussion

From the results, the antioxidant activity of the aqueous extract of fresh Madeni rose petal based on DPPH scavenging activity, H₂O₂ scavenging activity, ferrous chelating and reducing power activity are attributed to the presence of phenolic compounds as major components in this species and there is positive correlation between the antioxidant activity and the total phenolics and flavonoids.

Conclusions

The results obtained from this study clearly indicated that fresh Madeni rose petals extracts contain phenolic and flavonoid compounds. These compounds might be helpful in reducing the risk of the different diseases associated with the oxidative stress. Thus, the addition of rose petals extracts to food, drinks, cosmetic and pharmaceutical products can act as a non-caffeine source of natural antioxidants.

References

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