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Full length article

Bioactive Compounds Content and Antioxidant Activity of Pumpkin Fruits Cultivated in Yemen

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ABSTRACT

This study aimed to determine the bioactive compounds and antioxidant activity of pumpkin fruits cultivated in Yemen. Fresh Pumpkin samples were collected from four governorates of the country, namely, Sana'a, Ibb, Taiz, and Dhamar. The samples were analysed for β-carotene, vitamin A, ascorbic acid, total phenol, and DPPH IC_{50} activity of fresh pumpkin. The results showed that the mean values were ranged between (1.93 ±0.97 to 2.51 ±0.78 mg/100 g), (1620.12 ±81.48 to 210.84 ±65.52 µg RAE/100 g), (11.58 ± 3.23 to 15.12 ± 2.53 mg/100g), (2.57 ± 0.67 to 3.59 ± 0.97 mg GAE/100 g) and (0.88 ±0.48 to 3.28 ±0.39 mg/ml) for β-carotene, vitamin A, ascorbic acid, total phenol and DPPH IC_{50} activity respectively. Pumpkin samples from Taiz governorate (TP) had the highest β-carotene, vitamin A, ascorbic acid, and DPPH IC_{50} scavenging activity; whereas, the pumpkin samples from Dhamar governorate (DP) had the highest total phenolic content. These findings suggest that Yemeni pumpkin, particularly from the Taiz region, is a valuable source of natural antioxidants and could be promoted as a functional food. Further studies are recommended to comprehensively profile the bioactive compounds and antioxidant activity in different pumpkin parts and well-defined varieties across various Yemeni regions and seasons.

Keywords: Antioxidants activity, DPPH, Total phenolic, Ascorbic acid, β-Carotene, Pumpkin, Yemen

INTRODCTION

The consumption of fruits and vegetables promotes health, energy, and quality of life. Fruit and vegetable intake decreases health-related diseases including cancer, cardiovascular diseases, diabetes etc. Bioactive compounds including polyphenols, carotenoids, tocopherols, anthocyanin, vitamins, minerals, and fiber present in fruits have beneficial effects on health (Bijauliya et al., 2017). For this reason, the interest of the public and health professionals in functional foods in the prevention of diseases is gaining ground. In light of this, pumpkin has attracted the attention of researchers due to its nutritional profile and

health-promoting properties (González et al., 2023; Aydin, 2022).

Pumpkin, commonly known as Sitaphal or kashiphal belongs to the *Cucurbitaceae* family and the *Cucurbita* genus. The word pumpkin originated from the Greek word *pepon* which means large melon (Marr et al., 2004; Adebayo et al., 2013). The most widely grown pumpkin worldwide are *Cucurbita maxima, Cucurbita moschata* and *Cucurbita pepo* (Yoo et al., 2023). *Cucurbita maxima, Cucurbita pepo, Cucurbita moschata, Cucurbita ficifolia,* and *Cucurbita turbaniformis* are the five common species of pumpkin.in this contex. It `s believed that the genetic diversity of the germplasms of pumpkin leads to great variation in the shape, size, flavor, color, and n tritional content, and its nutrient composition also differs depending on the origin and cultivation environment (Kowalska et al., 2017; Muthoni and Shimelis, 2025).

Pumpkin is widely cultivated in different climatic zones, famous for its nutritional value and health-promoting effects, is consumed in abundance as a functional food and as a medicine for the treatment of various health conditions (Stovel, 2005; Hussain et al., 2021). Furthermore several studies have shown that the antioxidant components contained in pumpkin inhibit free radicals and reduce the risk of cancer, cardiovascular and neurodegenerative diseases (Xie et al., 2013; Kulczynski et al., 2020; Hussain et al., 2021), and antibacterial, anti-inflammatory capabilities, with the onset of many diseases or their symptoms (Hagos et al., 2023; Pinna et al., 2024).

Pumpkin flesh, is a source of micronutrients, and its seeds possess significant amounts of proteins, minerals, phytosterols, and essential fatty acids. Furthermore, pumpkin flesh is rich in bioactive compounds, especially carotenoids, polyphenols, amino acids, vitamins, and minerals. It is an excellent source of trace elements such as potassium, phosphate, and magnesium (Djutin, 1991; Adams et al., 2011; Dar et al., 2017; Hussain et al., 2021; Batool et al., 2022; Ghendov-Mosanu et al., 2023). Pumpkin is consumed directly or as byproducts. It`s pulp is widely used in the food industry for the production of pastries, baked goods, juices, jams, marinades, and baby food (Kulczynsk and Gramza-Michałowska, 2019).

In Yemen, pumpkin cultivation is primarily concentrated in the Sana'a governorate (specifically the Bilad Al-Rus Directorate) and Hadhramaut (in Al-Hadabah). The Bilad Al-Rus (Walan) region has been known for this cultivation since ancient times, However, to the best of our knowledge, no data are available on the bioactive compound content and antioxidant activity of Yemeni pumpkin flesh. Therefore, the objectives of this study were to determine the bioactive compound content and antioxidant activity of pumpkin fruits collected from different cultivation areas in Yemen.

MATERIALS AND METHODS

Study area

The study was carried out in the laboratory of the Biotechnology and Food Technology Department, Faculty of Agriculture, Thamar University. Yemen is a country located in the southwestern corner of the Arabian Peninsula. It has an area of approximately 530,000 square kilometers, which accounts for about 15% of the total area of the Arabian Peninsula. Yemen's territory includes around 200 islands, with the largest being Socotra (Al-Marwani, 2023). Yemen has a diverse climate that varies significantly by elevation, with a tropical arid/semiarid climate on the coast and in the desert, and a more temperate climate in the highlands. Coastal areas are hot and humid year-round, while the highlands experience warm summers and cooler winters with potential for frost. The mean temperatures in the highlands range from below 15°C in winter to 25°C in summer, and in the coastal lowlands from 22.5°C in winter to up to 35°C in summer. Yemen has two main rainy seasons, the *summer* (April-May) and the *autumn* (July-September), though rainfall amounts are highly variable across the country (World Bank Group, 2021).

Materials & Chemicals

Plant material of four pumpkin cultivars were purchased from local markets of four governorates of Yemen i.e. Bilad Al-Rawas district, Sana'a governorate (**SP**), Abaser, Mayfa'a Ans district, Dhamar governorate (**DP**), Al-Nashma and Al-Ma'afer district, Taiz governorate (**TP**), and Yarim district, Kitab area, Ibb governorate (**IP**) during the Autumn season of 2024. As illustrated in Photo 1. The pumpkin materials were then brought to laboratory for processing and analyses. Chemicals and solvents used in the study were procured from market of Dhamar city.

Photo. 1. Pumpkin samples from different cultivation areas of Yemen

Grading and sorting of pumpkins

Sorting and grading of pumpkins were done manually based on different quality parameters like color, size, shape, and maturity. Defective and undesirable fruits were removed during sorting using the keys given by Dhiman et al. (2018).

Plant material preparation

At the laboratory, the pumpkin fruits were washed and cut into two portions; the fruit matrix and seeds were scooped out. The samples were evaluated in triplicate for each analysis.

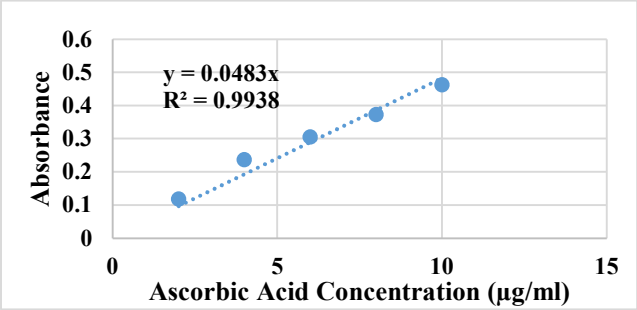

Fig.1. Calibration curve of ascorbic acid (at 254 nm)

Estimation of bioactive compounds

Ascorbic acid determination

Ascorbic acid content of pumpkin flesh was determined by measuring the absorbance of pumpkin flesh extract using a UV-VIS spectrophotometer (Cary 50, Varian, Australia) at 254 nm as described by Yulia et al. (2023) with some modifications. 5 g of the pumpkin sample was weighted and homogenized with 50 ml Oxalic acid solution 0.4%, then the mixture was filtered using filter paper. After then the absorbance of sample filtrate was measured. Oxalic acid solution 0.4% was used as a blank. Standard curve of ascorbic acid (0 – 10 µg/ml) was prepared and ascorbic acid contents of each sample were calculated from the regression equation of the calibration curve (y=0.0483x, R^2= 0.9938) (Fig. 1).

β-Carotene determination

The β-carotene was determined as the techniques described by Fikselová et al. (2008) with some modifications. 1 g of sample paste was soaked in 5 ml (methanol-hexane, 1:1) for 2 hrs. at room temperature in the dark. The β-carotene layer (hexane layer) was separated using a separating funnel. The volume was made up to 10 ml with hexane, and filtered through sodium sulphate to remove moisture from extract. The absorbance was measured at 450 nm using hexane as a blank. The β-carotene content was calculated using the formula:

$$\beta\text{-carotene } (\mu g/g) = \frac{A \times V \times D \times 10^4}{A^{1\%}_{1cm} \times W}$$

Where: A: Absorbance at 450 nm., V: Total volume of extract (ml), D: Dilution factor, W: Sample weight (g), $A^{1\%}_{1\,cm}$*: Specific absorbance coefficient of β-carotene.* Then, the β-carotene values were converted from (µg/g) and expressed as (mg/100g of sample).

Vitamin A determination:

Vitamin A content in pumpkin samples was expressed as a Retinol Activity Equivalent **(RAE)** from the β-carotene values using the relationship between β-carotene and vitamin A content following the keys given by IOM (2001) and using the following formula:

12 µg β-carotene = 1 µg RAE.

Estimation of antioxidant activity

Sample extraction

For estimation of total phenolic content (TPC) and DPPH radical scavenging activity, the samples were

extracted with methanol. 5 g of each sample was suspended in 100 ml methanol, allowed to extract for 3 hrs. with agitation, centrifuged at 3000 rpm for 10 minutes, and filtered. The extracts were analyzed for total phenolic content and antioxidant activity.

Determination of total phenolic content (TPC)

Total phenolic content was determined using the Folin-Ciocalteu reagent as techniques described by Mala and Kurian (2016). To the methanolic extracts of pumpkin pulp, 0.5 ml of Folin-Ciocalteu reagent was added. The contents were mixed, and 1 ml of saturated sodium carbonate solution was added; then the volume was adjusted to 10 ml with distilled water. The mixture in tubes was thoroughly mixed. Tubes were allowed to stand at room temperature for 1 hr. until the blue color developed. The blank was prepared with methanol. Absorbance of the clear supernatants was measured at 675 nm using a spectrophotometer. Gallic acid standard curve (0 - 250 mg/ml) was prepared, and the total phenolic content was calculated and expressed as mg gallic acid equivalent (GAE)/100g of pumpkin flesh (Fig. 2).

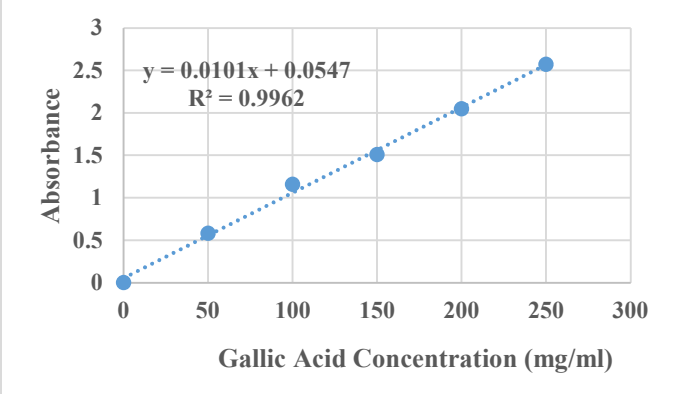

Fig. 2. Standard curve of gallic acid for total phenolic content.

Radical scavenging activity by DPPH assay

DPPH radical scavenging activity was measured following the method of Mala and Kurian (2016). Different dilutions of pumpkin extract were prepared (0 -250 µg/ml). From each sample dilution, 1 ml was pipetted into a test tube and 4 ml of 0.1 mM methanolic solution of DPPH was added. Then the tubes were shaken vigorously and allowed to stand at room temperature for 30 min. The control was prepared without a sample extract using 1 ml of methanol in a test tube instead of a sample extract and 4 ml of 0.1 mM methanolic DPPH. The methanol was used as a blank. The changes in the absorbance of each sample dilution were measured at 517 nm. Radical scavenging activity was expressed as the inhibition percentage using the following formula.

$$\%\ \text{Radical scavenging activity} = \frac{A\ control - A\ sample}{A\ control} \times 100$$

Where:

A control: Absorbance of control at 517 nm,

A sample: absorbance of the sample at 517 nm.

The IC_{50} of each sample was derived from the % radical scavenging activity vs concentration plot as (µg/ml) using the linear regression equation: $\boldsymbol{y = ax + b}$

Where: $\boldsymbol{x}$*: Sample concentration and* $\boldsymbol{y}$*: % Scavenging activity. (Fig. 3).*

Then, the DPPH IC_{50} value for samples were converted from (µg/ml) to (mg/ml).

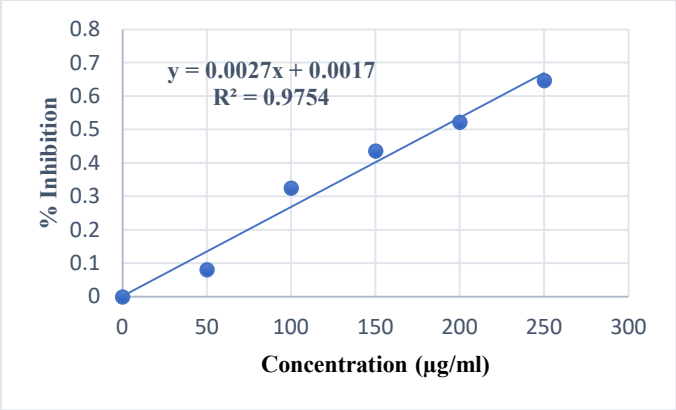

Fig. 3. DPPH scavenging activity curve of pumpkin sample (µg/ml).

Statistical analysis

The data obtained were analyzed using SPSS software (Version.16). The results were recorded as means ±SD. Significant differences ($p<0.05$) between the values of the samples' properties were determined by Duncan's multiple range test. $p < 0.05$ was considered significant.

RESULTS &DISCUSSION

The fruit of pumpkin is mainly made up of peel, seeds and pulp. Fresh pumpkin comprises 91.2% moisture, 0.16% fat, 0.97% protein, 0.73% ash, 0.52%

crude fiber and 4.3% carbohydrates (Nincevic Grassino et al., 2023).

Nutraceutical is an umbrella term that includes foods, food parts or dietary supplements that provide physical or protective benefits against chronic diseases. (Kalra, 2003). The bioactive components of pumpkin, such as polyphenols, fibers, polysaccharides, proteins, lipids, amino acids, carotenoids (precursors of vitamin A), vitamins (vitamin C, vitamin B2, vitamin E), minerals (potassium, calcium, magnesium, selenium) (Hussain et al., 2021), have been shown to be effective nutraceuticals in the treatment of oxidative stress-related healing disorders, including allergies, Alzheimer's disease, cardiovascular disease, cancer, diabetes, ocular, immune, inflammatory and Parkinson's diseases, as well as obesity (Nasri et al., 2014).

The qualitative and quantitative profile of biologically active compounds in pumpkin seeds, peels and cores depends on several factors: genotype (Kulczy´nski and Gramza-Michałowska, 2019), cultivation method, maturity degree, storage conditions and duration, processing method, drying and functional compound extraction process (Ratnayake et al., 2004; Sharma and Rao, 2023). Several studies have shown that the antioxidant components contained in pumpkin inhibit free radicals and reduce the risk of cancer, cardiovascular and neurodegenerative diseases (Xie et al., 2023).

Bioactive compounds of fresh pumpkin

β-Carotene content:

Pigments including carotenoids, zeaxanthin, and lutein are mainly responsible for the orange-yellow color of pumpkins. Among all the pigments, carotenoids play an important role in the changing of color from yellow to orange, following its immature to mature stage due to elevation in the content of carotenoids in the fruit by approximately 10 folds.The pigments in pulp are utilized as food additives and are also widely used in the field of health sector (Ahmad et al., 2021). Carotenoids and β-carotene are fat soluble compounds that function as pigments, antioxidants, bioactive agents, etc. These are characterized by the presence of alternate isoprenoid units. They play significant role in improve vision and are also metabolized to form vitamin A, which help to improve bodily function and immunity (Altaf et al., 2025). Furthermore, The β-carotene have a great importance to human health, and a carotenoid-rich diet is suggested for the prevention of different age-related and chronic diseases (Raikos, 2017).

The Table 1 shows the results of β-Carotene content in Yemeni pumpkins in current study. As shown, The statistical analysis revealed that there were no significant differences($P<0.05$) in β-carotene means values among pumpkin samples studied. The β-carotene mean values were 2.13 ±0.70, 1.93 ±0.97, 2.51 ±0.78, and 2.16 ±1.10 mg/100g in IP, DP, TP, and SP of fresh pumpkins respectively. Moreover, the TP pumpkin samples have the highest β-carotene contents, whereas, DP pumpkin samples have the lowest β-carotene contents. These results are higher than the findings reported by previous studies of (Zhou et al., 2017; Chuwa et al., 2022; Mala and Kurian, 2016; Rana et al., 2022; Stryjecka et al., 2023), and in parallel with the results reported by many workers (Karanja et al., 2017; Kulczynski and Michałowska, 2019; Ramachandran et al., 2022), and lower than findings of Shajan (2023). The consistent and contrary among the results of present study and previous studied could be attributed to varieties of pumpkins, maturity stages, and the location of pumpkin cultivation, color of pumpkin and harvesting time (Zahra et al., 2020; Pham et al., 2024; Pinna et al., 2024).

Table 1. Mean ± SD of β-carotene and vitamin A contents in fresh Yemeni pumpkins

Sample	β-carotene (mg/100g	Vitamin A (µg RAE /100g
IP	2.13 ± 0.70[a]	178.92 ± 58.8[a]
DP	1.93 ± 0.97[a]	162.12 ± 81.48[a]
TP	2.51 ± 0.78[a]	210.84 ± 65.52[a]
SP	2.16 ± 1.10[a]	181.44 ±92.4[a]

Different superscript letters in the same column are significantly different (p< 0.05) according to Duncan`s test.

Vitamin A content

The main source of vitamin A is carotenoids, which are important in the growth of embryonic development; thus, the high content of carotenoids in pumpkin makes it a highly valuable and nutritive fruit. β -carotene, α-carotene, lutein, and lycopene are the main carotenoids providing the excellent basis of pro-vitamin A carotenoids (Dhiman et al., 2009). Vitamin A content was determined as retinol activity equivalents (RAE) based on β-carotene content in fresh pumpkin.

The mean values of vitamin A in fresh Yemeni pumpkins are presented in Table 1. The statistical analysis revealed that there were no significant differences ($p < 0.05$) in vitamin A contents among pumpkin samples included in this study. The means values of vitamin A in fresh pumpkins were 178.92 ±58.8, 162.12 ±81.48, 210.84 ±65.52, and 181.44 ±92.4 µg RAE/100g for IP, DP, TP, and SP respectively. These results are lower than findings of Kulczynsk and Gramza-Michałowska (2019), who reported higher mean values. The differences mean values recorded among pumpkin samples subjeted to investigation in this study may be due to the genetic diversity of the *Cucurbita* species and the environmental conditions under which the pumpkins were grown. In addition, the samples included in this study were belong to different varieties and cultivars for example; the TP pumpkin samples belong to the *Cucurbita moschata* species, whereas the DP, IP, and SP samples belong to both *Cucurbita moschata* and *Cucurbita pepo* species. Ripening degree may also be the other reason for differences among pumpkin samples. Furthermore, Zahra et al. (2020) cited that, amount of vitamin A influenced by the color of Pumpkin pulp.

Ascorbic acid content

Pumpkin contains varying amounts of ascorbic acid (Vitamin C), typically between 9 to 10 mg/100g, although it can range from about 6.4 to 14.7 mg/100g depending on the variety and growing conditions. As an antioxidant, ascorbic acid in pumpkin contributes to boosting the immune system and is important for skin health. It is also an antioxidant that helps protect cells from damages**.**

Table 2 shows the results of ascorbic acid in fresh Yemeni pumpkins. As shown, The ascorbic acid contents were significantly different ($P<0.05$) among pumpkin samples collected from different geographical areas of Yemen. The highest mean values of ascorbic acid was recorded in TP pumpkin (15.12 ±2.53); while, the lowest value (11.58 ±3.23 mg/100g) was recorded in DP pumpkin. The ascorbic acid means values of IP and SP pumpkin samples were 13.56 ± 4.17 and 12.22 ± 3.11 mg/100g respectively. These results are higher than findings reported by previous studies (Blessing et al. 2011; Chuwa et al., 2022), and similar to findings of Tong et al. (2025) who studied the vitamin C contents in four varieties of pumpkin pulp in Vietnam. However, These results are lower than the findings of Hagos et al. (2023) and Kulczynski and Gramza-Michałowska, (2019) , who found the ascorbic acid contents in fresh pumpkin ranging between 24.2-84.23 mg/100g. These contrary in ascorbic acid contents may be due to variations in the maturity degree, pumpkin varieties, and soil composition, in which pumpkins grown.

Table 2. Mean ± SD of Ascorbic acid content in fresh pumpkins from different areas of Yemen

Sample	Ascorbic acid (mg/100 g).
IP	13.56 ± 4.17^{ab}
DP	11.58 ± 3.23^{b}
TP	15.12 ± 2.53^{a}
SP	12.22 ± 3.11^{ab}

Different superscript letters in the same column are significantly different ($p< 0.05$) according to Duncan`s test.

Antioxidant activity of fresh pumpkin

Pumpkin flesh has antioxidant activity due to its high content of bioactive compounds. These antioxidants help protect the body from damage caused by free radicals, potentially lowering the risk of chronic diseases. Cooking can affect the levels of these compounds and the overall antioxidant capacity (González et al., 2023).

Total phenolic content (TPC)

TPC in flesh pumpkin has been calculated as gallic acid equivalent (GAE) using the gallic acid standard curve equation $y = 0.0101 + 0.0547$, $R^2 = 0.996$ (Fig. 2). Based on the results in Table 3. The results revealed that the TPC significantly differed ($P<0.05$) between pumpkin samples of DP and SP; while, none with other samples subjected to investigation in this study. The mean values of TPC pumpkin samples were 3.59 ±0.97, 3.07 ±0.33, 2.97 ±0.31, and 2.57 ±0.67 mg GAE/100g in DP, TP, IP, and SP, respectively. These results are similar to findings found by (Rana et al., 2022); whereas, its lower than findings reported by Priori et al.(2022) in Brazil, and Hagos et al.(2023) from Ethiopia, the mean values reported by above workers were in the range of (288 and 369 mg GAE/100 g). These results are higher than the results of (Sharma and Rao, 2013). Other research workers from different regions of world (Zdunić et al., 2016; Kulczynsk and Gramza-Michałowska, 2019: Shajan, 2023; Arshad et

al., 2025; Tong et al., 2025; Alqahtani, 2025) also reported different mean values of TPC, the mean values reported by them were ranged between 2.58-635.75 mg/100g). The differences or consistent among mean values of pumpkin samples studied in current study and other studies could be attributed to genetical factors, harvesting time, storage periods, and environmental factors.

Table 3. Mean ± SD of Total phenolic content and IC_{50} of DPPH scavenging activity in fresh Yemeni pumpkins

Pumpkin Sample	Total phenolic compounds (mg GAE/100g)	IC_{50} of DPPH (mg/ml)
IP	3.07 ± 0.33^{ab}	3.15 ± 0.75^{a}
DP	3.59 ± 0.97^{a}	3.28 ± 0.39^{a}
TP	2.97 ± 0.31^{ab}	0.88 ± 0.48^{c}
SP	2.57 ± 0.67^{b}	1.94 ± 0.67^{b}

Different superscript letters in the same column are significantly different (p <0.05) according to Duncan`s test.

IC_{50} of DPPH scavenging activity:

The scavenging activity of pumpkin samples was calculated based on the concentrations of sample extract that provided 50% inhibition (IC_{50}), or the quantity needed to scavenge 50% of DPPH free radicals. The value of antioxidant activity (IC_{50}) was calculated based on the linear regression equation between % inhibition and the concentration of the samples. The results of IC_{50} of DPPH scavenging activity dipected in Table 3. As shown, The results are revealed that there were significant differences ($p < 0.05$) in the DPPH IC_{50} radical scavenging activity among the pumpkin samples. The TP pumpkin flesh samples have the strongest scavenging activity, as indicated by the lowest IC_{50} value (0.88 mg/ml); whereas, the pumpkin from DP has the lowest scavenging activity (3.28 ±0.39 mg/ml). The DPPH IC_{50} radical scavenging activity of IP and SP pumpkin samples were 3.15 ±0.75 and 1.94 ±0.67 mg/ml respectively. These results are in line with findings of (Pham et al. 2024; Astutik and Yanti, 2023) and higher than the findings of (Mala and Kurian, 2016) but its lower than the findings of (Alqahtani, 2025; Hagos et al., 2023). The variations in DPPH IC_{50} mean values of pumpkin in current study and previous studies may be due to the genetical, geographical and environmental factors. Furthermore, Waode and Umriani (2018) suggested that variations in the ripening stage may affect the IC_{50} value of pumpkin.

CONCLUSIONS

This study provides the first comprehensive analysis of bioactive compounds and antioxidant activity in pumpkin fruits cultivated across different regions of Yemen. The results demonstrate that Yemeni pumpkin flesh contain significant amounts of β-carotene, vitamin A, ascorbic acid, and phenolic compounds, with notable variation among geographical origins. Pumpkin samples from Taiz governorate (TP) exhibited the most promising antioxidant profile, showing the highest level of β-carotene, vitamin A, ascorbic acid, and the most potent DPPH IC_{50} radical scavenging activity. In contrast, samples from Dhamar (DP) recorded the highest total phenolic content. The significant influence of cultivation area on bioactive compounds composition underscores the importance of geographical and environmental factors in enhancing the nutraceutical value of pumpkin. These findings position Yemeni pumpkin, particularly from the Taiz region, as a valuable natural source of antioxidants with potential functional food applications.

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AUTHOR CONTRIBUTIONS

NYB and FMB performed the experiment, collection and analyzed the samples in field and laboratory. AMA analyzed the data statisticaly, written the first and final manuscript versions and supervisor of above researchers. All authors read and approved the final version of manuscript.

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المركبات الحيوية الفعالة ومضادات الأكسدة في ثمار اليقطين المزروع في اليمن

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الملخص

هدفت هذه الدراسة إلى تقدير المركبات الحيوية الفعالة ومضادات الأكسدة في ثمار اليقطين المزروعة في اليمن .تم جمع عينات من اليقطين الطازج من أربع محافظات في البلاد، وهي صنعاء، إب، تعز، وذمار .تم تحليل العينات لتقدير محتوياتها من بيتا كاروتين، فيتامين A، حمض الأسكوربيك، الفينول الكلي، ونشاط $DPPH\ IC_{50}$ لليقطين الطازج .أظهرت النتائج أن القيم المتوسطة تراوحت بين (1.93 ± 0.97 - 2.51 ± 0.78 مليجرام/100جم) و(162.12 ± 81.48 - 210.84 ±65.52 ميكروجرام RAE/100 جم) و (11.58 ± 3.23 - 15.12 ±2.53 مليجرام/100جم) و (0.88 ± 0.48 - 3.28 ±0.39 مليجرام/مل) و (2.57 ±0.67 - 3.59 ±0.97 مليجرام/100جم) لمحتويات بيتا كاروتين، فيتامين A، حمض الأسكوربيك، الفينول الكلي ونشاط $DPPH\ IC_{50}$ على التوالي .كانت عينات اليقطين المتحصل عليها من محافظة تعز (TP)تحتوي على نسبة اعلى من بيتا كاروتين، فيتامين A، حمض الأسكوربيك، و$DPPH\ IC_{50}$؛ بينما كانت عينات اليقطين المتحصل عليها من محافظة ذمار (DP)تحتوي على أعلى نسبة من الفينول الكلي. خلصت هذه الدراسة إلى أن اليقطين اليمني، خصوصا من منطقة تعز، مصدر هام للمركبات الحيوية الفعالة ومضادات الأكسدة الطبيعية. نوصي بإجراء مزيدا من الدراسات لتحليل المركبات الحيوية ومضادات الأكسدة لليقطين اليمني في مناطق اخر ى من البلاد وخلال كل فصول السنة.

الكلمات المفتاحية: اليقطين، مضادات الاكسدة، الفينولات الكلية، حمض الأسكوربيك، بيتا كاروتين، اليمن.

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