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RESEARCH ARTICLE

Comparison of Antioxidant Activity of Peel and Pulp Part of the Fruit *Pyrus pyrifolia*

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Abstract: The antioxidant activity of the peel and pulp of pear was compared in this work. In DPPH (1,1-diphenyl-2-picryl hydroxyl) assay the methanol extract of peel showed 75.20% activity which was much higher than pulp extract which was 52.38%. And in reducing assay peel extract showed 0.612 while the pulp extract showed 0.568 activities. Thus, the result indicated that pear peel exhibited higher antioxidant activity than pulp so it was concluded that the pear fruit has a viable source of natural antioxidants for the functional food and in medicinal application also.

Keywords: *Pyrus pyrifolia,* Antioxidant activity, DPPH (1, 1-diphenyl-2- picryl hydroxyl), Reducing power assay, Ascorbic acid

Introduction

Among fruits, pear is a typical fruit of temperate regions, belonging to the family Rosaceae, with delicate pleasant taste and a designer shape. Previous studies on pear fruit have focused on its chemical composition such as sugars, organic and fatty acids, minerals, amino acids, volatiles, vitamins and phenolics[1-6]. The overall nutritional value of fruit can be better understood by assessing their antioxidant activity[7]. The phenolic compounds present in the fruit mainly responsible for the antioxidant effect[8-10]. Though, the distribution of antioxidants may vary among different parts such as peel and pulp of the same fruit[11-12]. Many researchers have showed that the peel of several fruit such as citrus, apple and mango have shown higher antioxidant activity than the pulp fractions[13]. Even the pear skin have also much higher and more varied phenolics contents than the flesh of the fruit[14-18].

Experimental

Fruits were purchased from the local market of Allahabad, India.

Preparation of extract

Peel and pulp of 1 g pear was chopped and shade dried at room temperature. After drying it was soaked into methanol for 48 h. Then it was filtered and concentrated to dryness under reduced pressure.

Scavenging activity on DPPH radical

The DPPH radical scavenging assays elucidated by Chan *et al.*[19] was followed.

Reducing power assay

Antioxidant activity by reducing power assay method was developed by Yen and Duh[20] was as followed.

Results and Discussion

The result of antioxidant activity by DPPH method showed that at 200 µg/mL of methanol extract of peel exhibited free radical scavenging potential was17.31% (Table 1) which is higher than the extract of pulp (14.29%). Likewise, in 400 µg/mL extract of peel showed 32.82% while pulp extract showed 25.58%. Peel methanol extract of 600 ug/mL had higher free radical scavenging activity (47.36%) than extract of pulp (37.57%). Whereas, 800 µg/mL of peel extract had 75.20% activity which is higher than the pulp extract (52.38%). It was observed that both the extract had lower antioxidant activity compared to ascorbic acid (78.06%) and the peel had the higher antioxidant activity than the pulp.

The result of antioxidant activity by reducing power assay as shown in Table 2, it is evident that the peel and pulp extract of methanol showed maximum absorbance at 800 µg/mL 0.612 and 0.568 respectively. The most utilized solvent for determination of the radical scavenging activity by DPPH is methanol[21]. The data showed that both the extracts increased their reducing ability when the concentration of extracts was increased but both had lowest reducing power as compared to ascorbic acid.

Table 1. DPPH free radical scavenging activity of pulp and peel extract of pear fruit

Conc., µg/mL	%	Ascorbic acid	%	Pulp extract	%	Peel extract
200	68.87	0.061±0.0021	14.29	0.343±0.0237	17.31	0.597±0.0706
400	69.89	0.060±0.0015	25.58	0.298±0.0032	32.82	0.484±0.0558
600	71.42	0.056±0.0025	37.57	0.290±0.0085	47.36	0.38±0.0553
800	78.06	0.043±0.0015	52.38	0.271±0.0100	75.20	0.179±0.0471

Values were expressed as MEAN ± S.D. (n=3)

Table 2. Reducing power activity of pulp and peel extract of pear fruit

Conc., µg/mL	Ascorbic acid	Pulp extract	Peel extract
200	0.545±0.0030	0.372±0.0137	0.445±0.0080
400	0.604±0.0074	0.413±0.0025	0.495±0.0127
600	0.634±0.0053	0.499±0.003	0.565±0.0145
800	0.695±0.0061	0.568±0.0045	0.612±0.0076

Values were expressed as MEAN ± S.D. (n=3)

The highest activity in peel rather than pulp has also been showed in several fruits[12,13]. Many researchers have showed that the pear skin has higher activity than pulp of the fruit[14-18].

Conclusion

The result of the study suggests that both, the peel as well as the pulp part of the pear fruit have showed antioxidant activity but the peel had higher antioxidant activity than pulp.

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