

## Proximate Composition of Carrot Powder and Apple Pomace Powder

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**Abstract:** In recent years some vegetables like carrot and fruit by-products like apple pomace have gained importance as functional foods. A study was conducted to evaluate proximate composition of carrot powder and apple pomace powder. Carrot and apple pomace powder was prepared and proximate composition was evaluated in terms of moisture, ash, protein, ether extract and crude fibre. Average contents of moisture, ash, protein, ether extract and crude fibre in carrot powder were 8.78, 5.05, 6.16, 2.43 and 24.66 per cent respectively, and average content of moisture, ash, protein, ether extract and crude fibre in apple pomace powder were 9.75, 3.97, 5.11, 3.12 and 20.06 per cent respectively.

**Keywords:** carrot powder; apple pomace powder; proximate composition.

### 1. Introduction

Carrot (*Daucus carota*) is one of the nutritious vegetable consumed in raw and processed form throughout the world. In recent years, the consumption of carrot and its related products have increased

steadily due to recognition of antioxidant and anticancer activities of  $\beta$ -carotene in carrot, which is also a precursor of vitamin A (Kotecha *et al.*, 1998; Speizer *et al.*, 1999). Carrot is the richest source of  $\beta$ -carotene, iron, pectin, dietary fibres, complex carbohydrates and various minerals. Carrot could be consumed raw or in processed form or can be fortified in a variety of food products. Lee *et al.* (2003) found decreased lipid oxidation rate in carrot powder added in fried dough. Different workers have successfully utilized antioxidant properties of carrot in meat products.

Apple pomace is a by-product of the apple juice industry, abundantly and locally available, safe and can be used in animal feed (Bhat *et al.*, 2000) and human food (Masoodi and Chauhan 2007; Verma *et al.* 2010) without any further fractionation and purification. Apple is well-known and widespread fruit of the genus *Malus* (about 25 species) belonging to the family Rosaceae. Apple pomace is the main solid waste generated in apple juice making factories and contains >80 per cent moisture and it accounts for between 25 and 35 per cent of the weight of the processed raw material (Gullion *et al.*, 2008). Apple pomace is a good source of polyphenols and dietary fibre and has antioxidant property (Sudha *et al.*, 2007).

## 2. Materials and Methods

### 2.1. Preparation of Carrot Powder

Carrots were washed with tap water for cleaning and removal of extraneous dirt. The clean carrots were peeled manually with knife, cut into slices and ground to paste in home mixer (Black and Decker FG-550). This paste was then spread evenly on trays and dried in an oven at  $50 \pm 5$  °C. The dried paste was removed from oven when constant weight was attained. Dried carrot was ground in grinder (Black and Decker FG-550) to form powder, sieved and stored in air tight food grade plastic containers until used.

### 2.2. Preparation of Apple Pomace Powder

Fresh apples were washed with tap water for cleaning and removal of any extraneous matter. The apples were cut to remove seeds. The apple pomace was obtained after extraction of juice from these apple slices in a juicer (Philips HL-1631). The apple pomace so obtained was dried in an oven at  $50 \pm 5$  °C. The dried paste was removed from oven when constant weight was attained and then ground in grinder (Black and Decker FG-550) to form powder, sieved and stored in air tight food grade plastic container until used.

### 2.3. Proximate Composition

The percentage moisture, ash, protein, ether extract and crude fibre of the meat product samples

were evaluated as per standard procedure of Association of Official Analytical Chemists (AOAC, 1995).

### 3. Results and Discussion

#### 3.1. Proximate Composition of Carrot Powder

The proximate compositions of carrot powder and apple pomace powder are given in Table 1. In case of carrot powder, average values of various parameters were: moisture 8.78%, ash 5.05%, protein 6.16%, ether extract 2.43% and crude fibre 24.66%. Shyamala and Jamuna (2010) reported that 100 g of carrot contains moisture 7.54 g, ash 5.78 g, protein 6.21 g, ether extract 2.72 g and crude fibre 32 g.

#### 3.2. Proximate Composition of Apple Pomace Powder

In case of apple pomace, average values of various parameters were: moisture 9.75%, ash 3.97%, protein 5.11%, ether extract 3.12% and crude fibre 20.06%. Ganai *et al.* (2006) reported that apple pomace contains 7.31-8.53% crude protein, 2.6-3.33% ether extract, 19.34-20.66% crude fibre, 3.85-4.7% total ash. Both carrot powder and apple pomace are good source of antioxidants and dietary fibre.

**Table 1.** Proximate compositions of carrot powder and apple pomace powder

Parameter	Carrot powder (%)	Apple powder (%)
	(Mean ± S.E)	(Mean ± S.E)
Moisture	8.78 ± 0.17	9.75 ± 0.48
Ash	5.05 ± 0.32	3.97 ± 0.23
Protein	6.16 ± 0.06	5.11 ± 0.31
Fat	2.43 ± 0.12	3.12 ± 0.18
Crude fibre	24.66 ± 0.83	20.06 ± 0.31

### 4. Conclusions

On evaluating proximate composition of carrot powder, it is concluded that carrot powder has a good nutritive value, it is a good source of fibre and minerals, and low moisture content can increase its shelf life. Apple pomace despite being a by-product has good nutritive value is a good source of fibre and minerals, and low moisture content will increase its shelf life.

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