

Phytochemicals and *in vitro* antioxidant studies of *Daucus carota* L. seed extracts

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Introduction

Daucus carota (carrot) is a root vegetable that is often claimed to be a perfect health food. It is crunchy, tasty and highly nutritious, carrot are particularly good sources of β -carotene, fiber, vitamins K, potassium and antioxidants. The seed of carrot has been used medicinally for the treatment of a spectrum of diseases which include diabetes mellitus (Khaki, 2011), which is known to be associated with oxidative stress and hyperlipidemia. This research work evaluate the phytochemical and *in vitro* antioxidant activities of *Daucus carota* L. seed extracts.

Materials and Methods

Chemicals: 2,2-diphenyl-1-picrylhydrazyl (DPPH) used in the study was purchased from Sigma Chemical Company, St. Louis, Mo, USA. All other chemicals were of analytical grades and prepared in all-glass apparatus using distilled water.

Plant Material and Preparation: *Daucus carota* L. seed (carrot seed) was purchased from Rohim, Hooghly, West Bengal, India and was identified by Mr J. J. Azilla, a curator with the Federal College of Forestry, Jos Plateau state. The seeds were pulverised and 167.2 g of the powder was dissolved in 250ml of distilled water for 24 hours. The extract was filtered, and concentrated. The filtrate (20 g) was re-dissolved in water and partitioned in water-diethyl ether (2/1 v/v) in a separation funnel. The diethyl ether fraction was collected and concentrated in a water bath at 45°C to concentrate the ethyl acetate extract.

Quantitative phytochemical studies: Phytochemical content was evaluated using the methods of Harborne (1973) and Pearson (1976).

***In vitro* antioxidant studies:** DPPH scavenging activity, Total Antioxidant Capacity and Ferric Ion Reducing Property were evaluated using the methods of McCune and Johns (2002), Prieto *et al.* (1999) and Girgih *et al.* (2013) respectively.

Statistical analysis

Data are presented as means of triplicate determinations \pm SD. Data were subjected to one way Analysis of variance (ANOVA) followed by Duncan multiple range test using SPSS version 20, SPSS Inc., Chicago, IL, USA. Significant levels were taken at $p < 0.05$.

Results

Table 1: Quantitative phytochemical status of *Daucus carota* seed extracts

Component	AQE (%)	DEE (%)
Flavonoid	5.56	4.03
Alkaloid	7.28	5.22
Saponins	4.68	1.52
Steroid	3.23	2.71
Tannin	0.40	0.27
Phenols	0.37	0.22

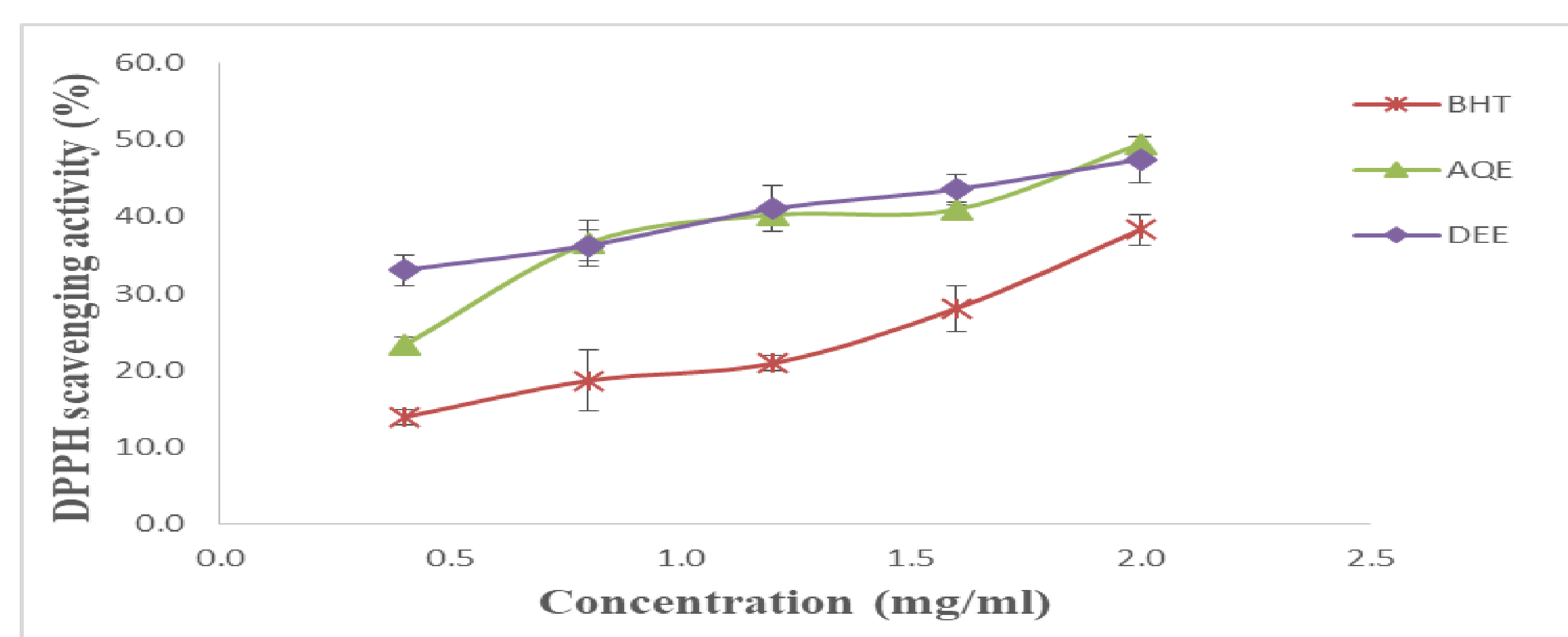


Figure 1: DPPH scavenging activities of *Daucus carota* seed extracts

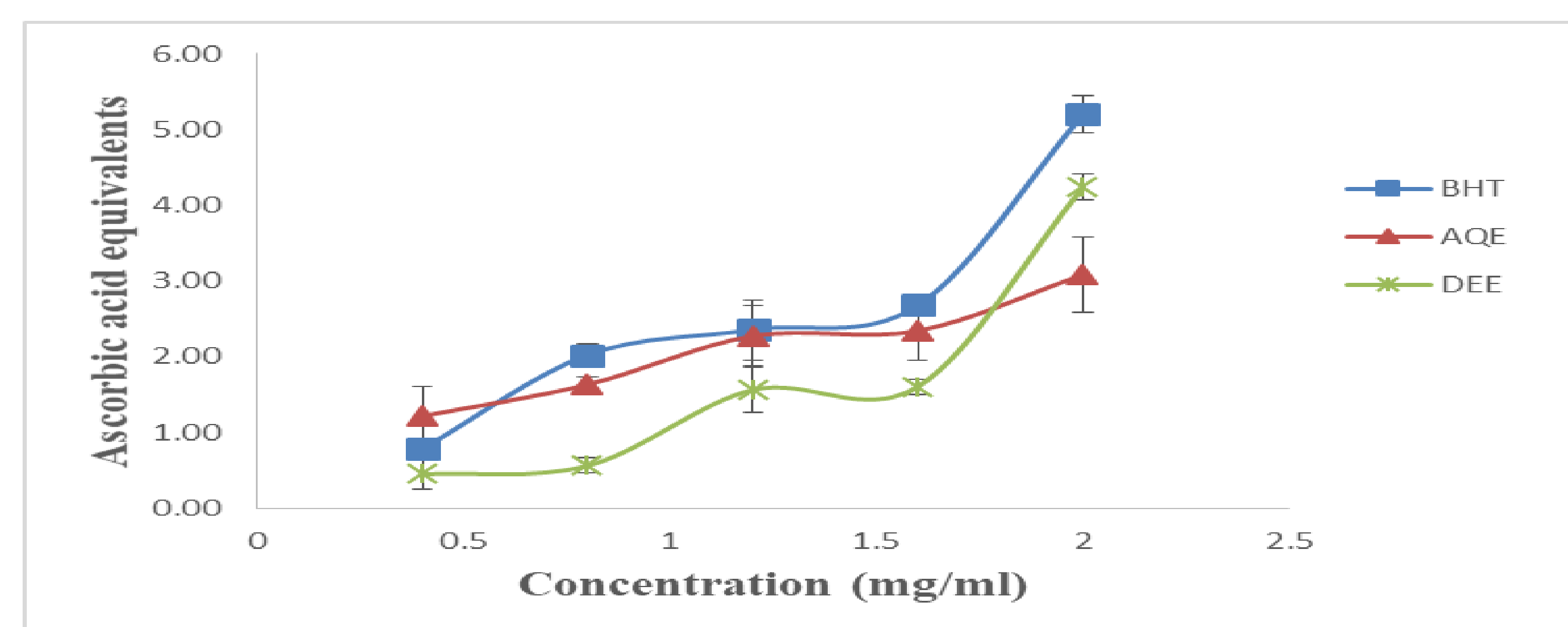


Figure 2: Total antioxidant capacity of *Daucus carota* seed extracts

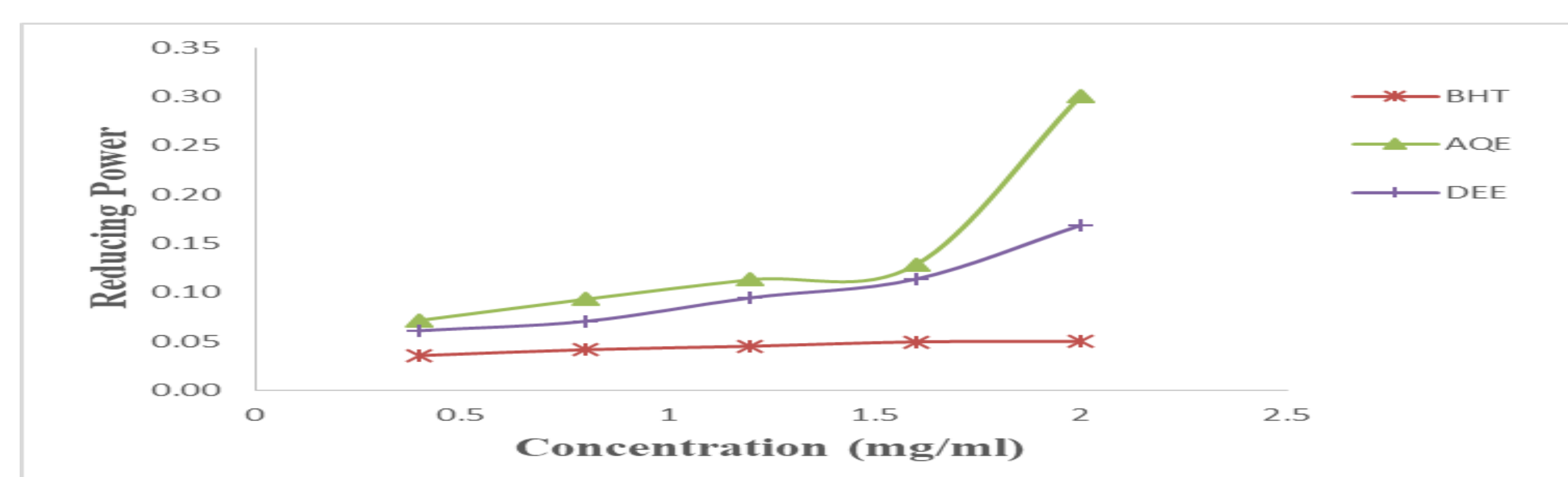


Figure 3: Ferric ion reducing effect of *Daucus carota* seed extracts

BHT – Butylated hydroxytoluene, AQE – Aqueous extract, DEE – Diethyl ether extract

Conclusion

The results show that aqueous and diethyl acetate fractions of *Daucus carota* seed; contains high quantity of flavonoids, alkaloids and steroids. The medicinal values of the seed extract may be related to the high antioxidant activities and phytochemical constituent that was detected.

