EFFECT OF DRYING METHOD ON THE ANTIOXIDANT PROPERTIES OF SOME LOCAL SPICES

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Introduction

Spices are a large group of natural ingredients such as dried seeds, fruits, roots, rhizomes, barks, leaves, flowers and other vegetative substances used in a very small quantity as food additives either as color, aroma, flavor or preservative [1]. They are mainly used to improve the palatability/taste and the visual appearance of diets. Most Spices contain phenolic compound that is responsible for their medicinal, antioxidant and preservative properties [2]. The three spices studied include ginger leaf, curry leaf and scent leaf dried using traditional sundried method and oven dried method. The objective of this study is to determine the antioxidant properties of the selected spice.

Materials and Method

The spices (ginger, curry and scent leaf) were purchased from a local market in Minna, Niger State. The spices were sundried 5 h daily for 2 consecutive days and turned over at 1 h interval to achieve uniform drying. After sun drying, the sample was milled to powder form. The second sample was oven dried at a temperature of 50ºc for 5 h and turned over periodically to aid uniform drying and milled to powder form. The results obtained from analysis of the antioxidant properties were subjected to one-way ANOVA and the means were separated by Duncan Multiple Range Test using SPSS version 20.

Results and Discussion

The antioxidant properties of the spices is presented in Table 1. Total phenol was in the range of 185 to 290 mg/100g. There was a significant difference across the samples. Total flavonoid ranged from 19 to 27 mg/100. There was significant difference in the values with sample oven dried having the highest value. The decrease in the values of the sundried sample may be due to rapid loss of phenolic compound when the spices were exposed to uncontrolled sun drying temperature [3]. Total flavonoid and phenol have the ability to act as antioxidant, ameliorate inflammation, modulate enzyme activity and regulate gene expression [3].

Table 1 Antioxidant properties of the samples

	Parameters (mg/100g)	
Samples	Total phenol	Total flavonoid
Scent leaf SD	$185.0^{d}1 \pm 0.06$	$25.96^{b} \pm 1.15$
Scent leaf OD	$290.52^{a} \pm 4.60$	$27.56^{ab} \pm 0.40$
Ginger SD	$222.58^{c} \pm 0.13$	$19.06^{d} \pm 1.00$
Ginger OD	$249.31^{b} \pm 3.46$	$21.12^{c} \pm 0.09$
Curry leaf SD	$247.65^{b} \pm 0.16$	$27.96^{a} \pm 0.23$
Curry leaf OD	$221.97^{c} \pm 1.57$	$19.85^{d} \pm 0.35$

Values are means ± standard deviation of duplicate determination. Means in the same column followed by different superscripts are significantly different ($p<0.05$).

Key:

SD = Sun dried samples
OD = Oven dried samples

Conclusion

The result shows that sun drying and oven drying methods are effective in the processing of spices as well as affect the functionality of the spices in food system. Oven dried samples were found to exhibit a better properties in the parameter investigated. Therefore, the use of oven drying method is recommended in the drying of spices due to its control temperature of drying to minimize the destruction of the antioxidant properties of the spices and also to reduce incidence of contamination of the spices when exposed to open environment for sun drying.

References

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