

**EFFECT OF DIFFERENT COOKING METHODS ON NUTRIENT
COMPOSITION OF SELECTED BRASSICA FAMILY
VEGETABLES**

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ABSTRACT

EFFECT OF DIFFERENT COOKING METHODS ON NUTRIENT COMPOSITION OF SELECTED BRASSICA FAMILY VEGETABLES

Numerous studies indicate that Brassica vegetables protect humans against cancer; they are rich sources of total phenolic compound and possess high content of vitamins and mineral nutrients. In this study, 2 types of Brassica vegetables which are broccoli and cauliflower were analyzed for its total phenolic compound, vitamin C and minerals (sodium, calcium, iron, copper and zinc). Four conventional household cooking methods, namely steaming, boiling, stir-frying and using microwave were used to evaluate the effects of cooking. Results showed that from all cooking treatment, phenolics and vitamin C were more affected than minerals. Minerals reduced slightly after the cooking treatments compare to the raw. There is significant difference ($P < 0.05$) of sodium content between the raw and all the treatments in both samples. The calcium content did not differ significantly in raw or cooked cauliflower while calcium content in broccoli was significantly reduced ($P < 0.05$) from raw, stir frying, using microwave, steaming and boiling, respectively. Microwaving not shows a significant effect on iron content compare to the raw in both samples. Raw broccoli (0.33 mg/100 g weight basis) has highest value of copper content compare to the raw cauliflower (0.14 mg/100 g weight basis). Zinc content in all cooking treatments slightly reduced from raw broccoli. All cooking methods produce significant loss of total phenolic, the cauliflower (81.25%) and broccoli (73.33%) which was subjected to steaming treatments. Vitamin C was destroyed to the greatest extent by boiling followed by stir frying and steaming. Microwaving did not show significant loss in vitamin C in both samples. Based on this research, Microwave cooking resulted in greater nutrient retention when compared with samples cooked by others cooking methods. Boiling resulted in highest loss of nutrient to surrounding water than other treatments.

CHAPTER 1

INTRODUCTION

1.1 Background

Food composition refers to the substances or components found in beverage or food. By identifying and quantifying the nutrients in food, scientists have obtained the data needed to develop tables of food composition. The key nutrients that compose foods includes the large molecular substances, such as protein, fat (lipid), and carbohydrate (starch and sugars), as well as the molecules of water, vitamins, minerals and phytochemicals.

Brassica family provides great amount of vegetables than any other genus. Brassicas are members of the Brassicaceae or mustard family, formerly known as the Cruciferae or crucifer family; hence, they are also called crucifers. This diverse grouping includes plants whose leaves, flowers, stems, and roots that are edible. Some of the common Brassicas include broccoli, Brussels sprouts, cabbage, cauliflower, swedes, and turnips. Less familiar Brassicas include broccoli raab, collards, cress, kale, kohlrabi, mustard and bok choy.

Cabbage is the one of the oldest Brassicas, and the ancestor of broccoli and cauliflower. Cabbages are classified as either green or red, although color