

## NUTRITIONAL ASSESSMENT OF RAW AND COOKED NON-CONVENTIONAL DILL (*Anethum graveolens*) SHAK REGARD TO MINIMIZING MALE NUTRITION IN BANGLADESH

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### ABSTRACT

Dill cultivated throughout the world as a medicinal plant. It is used traditionally as a popular aromatic herb and spice. Dill (*Anethum graveolens*), Physicochemical, Medicinal uses, Antimicrobial, Antioxidant, analgesic effects. Dill (*Anethum graveolens*) used as an anti-convulsion, antiemetic, anti-cramp (in children), as a wound healer and to increase the appetite and strengthen the stomach. *Anethum graveolens* contained essential oils, fatty oil, moisture proteins, carbohydrates, fiber, ash, furanocoumarin, polyphenols and mineral. Previous studies showed that *Anethum graveolens* induced antimicrobial, anti-inflammatory, analgesic, gastric mucosal protective and ant secretory effects, smooth muscle relaxant effect, hyperlipidemia, increased progesterone concentration, and many other effects. The aim of the present review is to highlight the chemical constituent and pharmacological effects of *Anethum graveolens* before cooking and after cooking. There are protein and starch loss after cooking, Vitamin-C and Lipid loss moderately but Beta carotene and Iron loss very little.

**Key words:** Homestead garden, nutritional status, anti-inflammatory, analgesic.

### Introduction

Malnutrition in Bangladesh is among the highest in the world. More than 54% of pre-school children and 50% of women suffer from chronic nutritional deficiency (Hazra, *et al.*, 2008). Therefore, it is very urgent need to find out diversify food sources in terms of both land and environmental sustainability to satisfy the nutritional requirements of the people in Bangladesh. Because of their high nutritional and medicinal value, use of vegetables can play an important role in improving the nutritional status of the population and can prevent a number of common diseases (Mowsurni, 2013). The genus name *Anethum* is derived from Greek word aneeson or aneeton, which means strong smelling. Its commonly used in Ayurvedic medicine is in abdominal discomfort, colic and for promoting digestion. It cures 'vata', 'kapha', ulcers, abdominal pains, eye diseases and uterine pains. Charaka prescribed the paste of Linseed, castor seeds and shatapushpa (*A. graveolens*) pounded with milk for external applications in rheumatic and other swellings of joints. It was used in Unani medicine in colic, digestive problem and also in gripe water. It was indigenous to Mediterranean and Central Asia. Since Egyptian times, *Anethum* had been used as a condiment and also in medicinal purposes. These leafy vegetables are important to the life of the dwellers of the local areas. These leafy vegetables are one of the main food items of rural people that they intake daily basis as cooked food. Dill shak is an indigenous leafy vegetable that is available in Sirajganj and Rajshahi region in Bangladesh. Hence the study conducted with assessing the nutritional value of dill plants showing the nutritional variations before and after boiling.

### Materials and Methods

This study was conducted in the winter 2020-21 and 2021-22 in a research field of the Bangladesh Institute of Research and Training of Applied Nutrition (BIRTAN) Regional Centre, Sirajganj. This experiment was carried out in the form of factorial in randomized complete block design (RCBD) by four replications. Soil sampling and analysis Prior to testing the depth between the surface and 30 cm in the soil was randomly

sampled and sent to the laboratory in order to determine the soil physical and chemical properties in the Soil Resources Development Institute (SRDI). The seeds were collected from Bangladesh Agricultural Research Institute (BARI), Regional Spices Research Centre Shipganj, Bogra and cultivated in every plot by the distance of 5 cm in a row and buried in the soil in depth of 0.5 to 1 cm. The irrigation process was done immediately after cultivation and after that it has done every four days. The field was prepared by cultivating and twice perpendicular disc harrowing followed by smoothing with leveler and then making furrows in October. BARI spices center's seeds of dill were then sown in 4m×2m plots of six rows in November. Potassium fertilizer was applied to the land evenly into the soil base at 100 kg of potassium sulfate per hectare. Nitrogen was distributed evenly in the respective plots as follows: one third at the 5 to 4 leaf stage and another third at the emergence of the inflorescence emergence and then pre-respective irrigated plots were broadcast between rows. Seeds inoculated with nitroxin biofertilizer were stored in a black plastic in a cool place until planting time. The maximum time between inoculation of seeds and planting was about 5 h, and irrigated cultivation took place 1 week after emergence. The sowing was done in 4m × 2m plots with six rows in each plot.

**Nutrient and medicinal contents characterization:** Evaluation of chemical composition were performed in triplicate to estimate moisture content, pH, lipid, crude fibre, total ash content, protein and carbohydrate. The Micro Kjeldahl method will utilize for crude protein determination by using a 6.25 correction factor. Total ash content of samples will be measured by muffling in a muffle furnace at 550 °C-600 °C for 6-8 h and total dietary fiber measured by using sequential enzymatic digestion. Finally, the determination of total carbohydrates obtained by the differenced, using data from moisture, ash, total lipid, protein and fiber contents.

**Evaluation of minerals:** For estimating of total N content colourimetric determination in kjeldahl digests method were follow according to Baethgen and Alley (1989). 0.1g of each sample was digest adding catalyst mixture (100:10: 1 of K<sub>2</sub>SO<sub>4</sub>: CuSO<sub>4</sub>: Se) and then the diluted digests were mixed with a weakly alkaline mixture of Na salicylate and Cl sources to ensure a color reaction.

## Results and Discussion

Dill is an annual herb usually grows to a height 50-150 cm. It is characterized by hollow, furrowed, branched stems and trip innate leaves with linear leaflets. The plants are green and yellowish flowers are arranged in compound terminal umbels, which produce a dried ripe fruit commonly called schizocarps. The fruit is brown, oval, compressed, winged about one-tenth inch wide with three longitudinal ridges on the back, three dark lines between them and two on the flat surface. Dill seeds have a strong spicy odour, therefore used as a flavorings agent in the food industry for salads, sauces, soups, tea, sea foods and especially in pickles. It is also used in perfumery to aromatize cosmetics, detergents and soaps. The fresh aerial parts of plant are used as an edible vegetable. The leaves of dill are rich in minerals like phosphorus, potassium and magnesium and used in salads and tea. Dill seeds are commonly used for bladder inflammation, liver diseases and insomnia.

Dill (*Anethum graveolens*) used as an anti-convulsion, antiemetic, anti-cramp (in children), as a wound healer and to increase the appetite and strengthen the stomach. *Anethum graveolens* contained essential oils, fatty oil, moisture proteins, carbohydrates, fiber, ash, furanocoumarin, polyphenols and mineral (Gul, 2011). The studies showed that *Anethum graveolens* induced antimicrobial, anti-inflammatory, analgesic, gastric mucosal protective and ant secretory effects, smooth muscle relaxant effect, hyperlipidemia, increased progesterone concentration, and many other effects (Meisner, 2004). The present review was to highlight the chemical constituent and pharmacological effects of *Anethum graveolens* before cooking and after cooking there are protein and starch loss after cooking, Vitamin-C and Lipid loss moderately but Beta carotene and Iron loss very little.

Table 1. Different physiochemical and parameters of dill shak

Sample	Without Boil, 2021	With Boil, 2021	Without Boil, 2022	With Boil, Dill 2022	Without Boil (Average)	With Boil (Average)	Total loss	Percentage of loss (%)
Starch $\mu\text{g/ml}$	118.6	98.3	251.0	160.1	184.15	129.20	54.95	29.84
Vit-C mg/ (g)	01.00	0.625	0.6	0.55	0.81	0.587	0.223	27.53
Protein $\mu\text{g/ml}$	226.829	191.463	175.608	152.683	201.22	172.07	28.52	14.17
Lipid mg/(g)	3.4	1.9	5.8	5.4	4.6	3.25	1.35	29.35
Fe++ mg/(g)	24.12	22.11	22.11	20.10	23.11	21.105	2.01	8.68
Beta carotene mg/g	3.096	2.948	4.14	2.28	3.62	2.62	1	27.34

### Conclusion

The present review is to highlight the chemical constituent and pharmacological effects of *Anethum graveolens* before cooking and after cooking there are protein and starch loss after cooking, Vitamin-C and Lipid loss moderately but Beta carotene and Iron loss very little.

### Recommendations

The present study provided a reasoning and reassurance for the uses of *A. graveolens* for medical purposes. *A. graveolens* may be used as a good supply of natural antioxidants through probable nutrition supplement. Now, it needed cultivated widely throughout the world including Bangladesh.

### References

- Gul, M.Z., Bhakshu, L. M., Ahmad, F., Kondapi,A.K., Qureshi,I.A and Gazi, I.A. 2011, Evaluation *Abelmos cusmoschatus* extracts for antioxidant, free radical scavenging, antimicrobial and antiproliferative activities using vitro assays. *Alternative medicine*, 11:64.
- Hazra, B. and Biswas, S. N. 2008. Mandal Antioxidant and free radical scavenging activity of *Spondiaspinnata* BMC Complement Altern. Med., 8 (1) p. 63.
- J. Murphy Meisner Report of Pesticide Hotspots in Bangladesh (English) World Bank, Washinton DC, 2004.
- Mowsurni, F., Chowdhury, M. and Oyster mushroom, 2013. Biochemical and medicinal prospects *Bangladesh J. Med. Biochem.*, 3 (1) pp. 23-28.
- N. Alam, et al. Nutritional analysis of cultivated mushrooms in Bangladesh-Pleurotusostreatus, Pleurotussajor-caju, Pleurotus Florida and Calocybeindica *Mycobiology*, 36 (4) (2008), 228-232.
- W. Baethgen, M. 2019, Alley A manual colorimetric procedure for measuring ammonium nitrogen in soil and plantKjeldahl digests *Commun. Soil Plan*, 20 (9-10) 961- 969.