

**“AN ANALYTICAL STUDY ON *BRASSICA OLERACEA* (*CAULIFLOWER*)
USING DIFFERENT WASHING METHODS WITH REFERENCE TO
PESTICIDE RESIDUE”.**



A Thesis Submitted To
PARUL UNIVERSITY
For the award of Degree of
DOCTOR OF PHILOSOPHY (Ph. D.)

IN
AGADA TANTRA ABUM VIDHI VAIDYAKA
(TOXICOLOGY & FORENSIC
MEDICINE)
FACULTY OF AYURVEDA

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APRIL 2022

ABSTRACT

Objectives:

1. To analyze the effect of different washing methods on cauliflower with reference to pesticide residue .

2. Methodology:

1.Collection of Raw cauliflower.

45 cauliflower samples were randomly (Random method) collected at the time of harvesting in the month of March and November 2019 from Nazafgarh (located at 28.60⁰ N 76.98⁰ E) in South west Delhi District in NCT of Delhi . In the field the Distance b/w one cauliflower to another is 18-24 inches .Each part were cut into small fragments then further divided in to 3 major groups and were coded as below.

- **Sample A :**
 - **ARE** – Raw,
 - **ATWE**- Tap Water
 - **ABE**- Boiled water washing;
 - **ABHE** - Boiled Haridra water washing
 - **AMWE**- Medicated water washing
- **Sample B –**
 - **BRE** – Raw
 - **BTWE**- Tap Water
 - **BBE**- Boiled water washing;
 - **BBHE** - Boiled Haridra water washing
 - **BMWE**- Medicated water washing
- **Sample C –**
 - **CRE**– Raw,
 - **CBE**- Boiled water washing;
 - **CTWE**- Tap Water
 - **CBHE** - Boiled Haridra water washing
 - **CMWE**- Medicated water washing

3. Purchased Medicated Water Herbs From Herbal Pharmacy, Khari bawri New Delhi .

4. Preparation of Ash

a) **Materials required:** These materials were required –

Big Metal *Kadayi*, Stove, Cylinder, Flame gun/match box , big metal stirrer, storage covers, Electronic weigh machine, steel vessels and cotton cloth. All were collected and procured samples were cleaned to remove foreign particles with standard operating procedure.

- 1) *Ajashrungi*- root and stem
- 2) *Indravaruni*- root and stem
- 3) *Guduchi* :(*Tinospora cordifolia*) Linn. stem
- 4) *Uttamarini*: Whole plant
- 5) *Ativisha* : Root
- 6) *Phanijjaka*: whole plant
- 7) *Sarala* :Resin
- 8) *Haridra*: Rhizome
- 9) *Daruharidra*: Stem bark
- 10) *Bruhatela*: Seeds
- 11) *Manjishta*: Root
- 12) *Rasna*: leaves
- 13) *Ushira*: Roots
- 14) *Bakuchi*: seeds

All the Dry drugs were procured from khari bawli , New Delhi and authenticated in authorized lab. Later on ,Drugs from 1-6 ingredients were ignited with the help of flame gun and they left for cooling after completely burnt and then kept for analysis. Drugs from 7-14 are prativapa dravya's

Observations:- observe the ash for colour, texture, till rekhapurnatva

b) Preparation of *Medicated water*

- 800 ml of distilled water were prepared in distillation apparatus under aseptic measures and stored in clean, dry and air tight can. This water was used for all the procedures.
- **PrativapaDravya:** *Sarala Nirryasa, Haridra, Daruharidra, Bruhat Ela, Manjistha, Bakuchi, Rasna* and *Ushira* were made into powder and were sieved.
- **Ratio of ingredients:** The formulation follows the Kshara paka vidhi as told by acharya vagbhatta

Organoleptic characteristics of Medicated water

- Medicated water is dark brown, thick, alkaline and viscous liquid bearing aromatic pleasant odour and its characteristic slight bitter taste.
- **Colour:** LightBrownColour was appeared after adding 3 drops. It was changing to dark as the concentration was increasing.
- **Taste:** It was pleasant, agreeable, non-nauseating when we add 3 drops in 100ml of water.
- **Odour:** It was pleasant, pleasurable, non-nauseating and non irritant.
- **Appearance:** There was moderate change in consistency at 5 drops concentration in both of the samples and Little sedimentation was observed after 30 min.
- The colour, taste, odour and appearance of water are directly proportional to the concentration of the herbal extract added to water.

5. Washing methods:

After quartering and cleaning the raw sample Total 4kg of edible part of cauliflower were kept separated.

1. Among the above , 1st part 20gm sample were kept as **Raw sample** (coded as AR, BR & CR) were extracted as it is ,without submitting to any washing method which were considered as controls for respective groups.
2. Second part of cauliflower (20gms) was washed in running **Tap water** for 5 min, rinsed and soaked on tissue paper and further taken for extraction procedure
3. Third part of cauliflower (20gms) was washed in 175ml of **Boiled water** for 5 min,

rinsed and soaked on tissue paper and further taken for extraction procedure .

4. Initially **Boiled Turmeric water** was prepared by boiling 2gm of *Haridra* (Turmeric) powder in 175ml of water for 5 min. The fourth part of *Cauliflower* (20gms) was added to Boiled *Haridra* water, rinsed for 5 min and then soaked on tissue paper which was taken for extraction procedure.

5. Fifth part of cauliflower (20gms) was washed in 175ml of **Medicated water** ,rinsed for 5 min , soaked on tissue paper and further taken for extraction procedure.

Conclusions:

- Cauliflower samples are contaminated with different pesticide because it is not applied on vegetables judiciously according to recommended doses and not according to good agricultural practices.
- This Study helps in Increasing the vision of consumer about adverse effects of pesticide residues in food chain.
- Pesticide residues showed significantly reduced after turmeric water washing and medicated water washing.
- There is need of highlighting the awareness regarding the use of traditional methods told by Acharya's.
- Study helps in Revalidating the concepts of Ayurveda.
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Keywords: *Cauliflower*, *Hymexazol*, Cypermethrin, Profenofos, Indoxacarb, Boiled *Haridra* water, *shodhana* , medicated water.