

ANTI MICROBIAL ACTIVITY OF SEED EXTRACT OF **CUCURBITA PEPO**

Bhagyalakshmi Nair*; Praful Patil; Sandeep Waghulde; Pravin Naik, Nilesh Gorde, Tushar Baviskar

Abstract:

Preliminary phytochemical screening of the extracts revealed the presence of Carbohydrates, Steroids, Proteins, amino acids alkaloids, flavonoids, glycosides and tannins. The presence of these bioactive constituents is associated with the antimicrobial activity of the plant. The seed extract of *Cucurbita pepo* dissolved in alcoholic and hydroalcoholic solution showed the spectrum of inhibition on, *Bacillus subtilis*, and *Escherichia coli* by Cylinder plate method. The observations revealed significant zone of inhibition and supports to antibacterial activity.

Key word: *Cucurbita pepo* seeds, anti-microbial screening, E.coli, B. subtilis

Introduction:

Cucurbita maxima Duchesne belongs to family Cucurbitaceae commonly known as “Pitakusmandah” in Sanskrit; “Kaddu” or “Sitaphal” in Hindi and “Squash” or “Red guard pumpkin” in English, has been claimed in traditional literature to be valuable against a wide variety of diseases.

It is a trailing annual herb with somewhat prickly or hairy stem and axillary tendrils, leaves simple, alternate; flowers large, yellow, unisexual, solitary; fruits fleshy, round or oval, brown; seeds ovoid or oblong, compressed. It is widely cultivated throughout India and in most warm regions of the world, for use as vegetable as well as medicine. Both of its fruits and the aerial parts are commonly consumed as vegetable. The fruits are sweet, refrigerant, emollient, diuretic, sedative and tonic and are useful in burns, scalds, inflammations, abscesses, boils, migraine and neuralgia.

This plant has been traditionally used in many countries such as India, China, Brazil, Yugoslavia and America as antidiabetic and antihyperlipidemic, antitumor, antihypertensive, anti-inflammatory, immunomodulatory and antibacterial agents and the seeds are also used as anthelmintic, diuretic and nervine tonic, in nervous debility and also used as abortifacient and insecticidal.

Material and Method

Extraction:

The seeds were collected, washed, dried at room temperature. The dried seeds were crushed into finely powdered homogenous mixture.

Preparation of Stock Solution I:-

1 gram of pumpkin seed powder was weighed and dissolved in alcoholic (100% absolute alcohol) and hydro alcoholic (50% absolute alcohol and 50% water) solutions respectively and was kept for maceration (for a period of 60 days).

Preparation of Stock Solution II:-

Stock Solution I was filtered and 2 ml from the stock solutions (both alcoholic and hydro alcoholic) was withdrawn and was further diluted to 100 ml

Further dilutions of 20, 60, 100 µg/ml was prepared for performing anti bacterial evaluation.

Nutrient broth preparation:

Ingredients:

1. Peptic digest of animal tissue (5gm/L) – it provides organic nitrogen and hence is an alternative source of nitrogen.
2. Sodium chloride (5gm/L) - this gives the mixture proportions similar to those found in the cytoplasm of most organisms.
3. Beef extract (1.50gm/L) - the water-soluble content of these contribute vitamins, carbohydrates, nitrogen, and salts.
4. Yeast extract (1.50gm/L) - this provides vitamins and growth factors.
5. Agar (15gm/L) – agar gives the mixture solidity.
6. pH - adjusted to neutral (6.8) at 25 °C.

Preparation:

The above mentioned ingredients were combined together and boiled approximately for one minute to ensure they are mixed and to sterilize them. Then they are cooled to around 50 °C (122 °F) and poured into Petri dishes which are covered immediately. Once the dishes hold solidified agar, they are stored upside down and are often refrigerated until used.

Procedure (Cup and Plate method)

1. Nutrient agar was poured into Petri dishes and was allowed to solidify.
2. Then bacterial culture (*E.coli* and *Bacillus subtilis*) is spread on the plate.
3. Allow it settle for 10 minutes
4. With the help of borer wells were prepared in each plate.
5. 1ml of dilutions of concentration 20, 60, 100µg/ml (both alcoholic and hydro alcoholic solutions) was poured into plates respectively.
6. Allow it to stand for 15 minutes.
7. Then incubate it in incubator for 48 hours.
8. Measure the zone by using antibiotic zone reader

Result and conclusion:

Alcoholic Solution				Hydro Alcoholic Solution			
E coli		B subtilis		E coli		B subtilis	
concentration (µg/ml)	zone of inhibition (cm)	concentration (µg/ml)	zone of inhibition (cm)	concentration (µg/ml)	zone of inhibition (cm)	concentration (µg/ml)	zone of inhibition (cm)
20	1.42	20	1.5	20	1.5	20	1.50
60	1.60	60	1.52	60	1.60	60	1.58
100	1.62	100	1.60	100	1.65	100	1.75

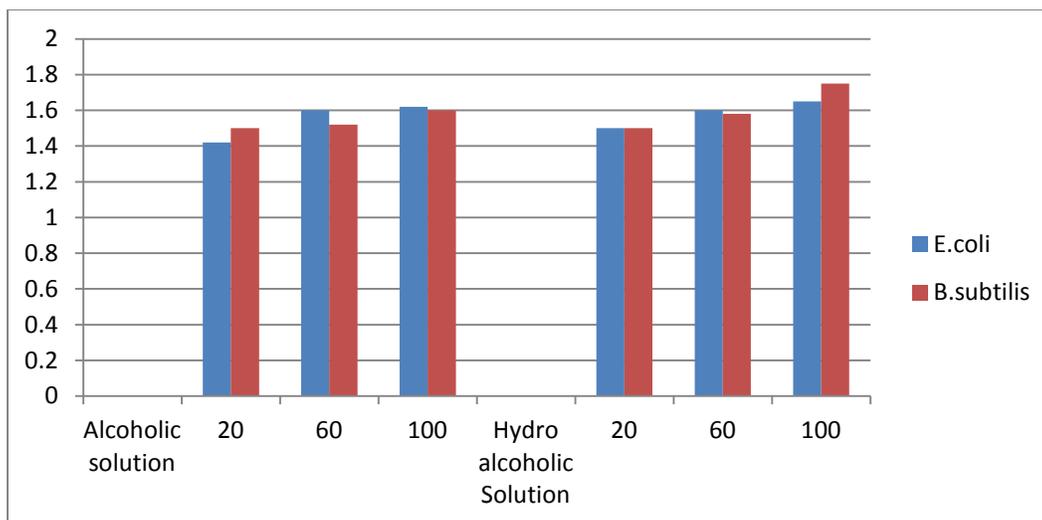


Fig 1: Graphical Representation of Anti Microbial Activity of *Cucurbita Pepo* on *E coli* & *B subtilis*

Based on the above studies and experiments we can conclude that *Cucurbita pepo* shows significant Anti microbial activity against *Escherichia coli* and *Bacillus subtilis*. The *Cucurbita pepo* seed extract at different concentrations were introduced and possessed good anti microbial activities but out of the two solutions, the hydro alcoholic solution was giving more responses of inhibition compared to the alcoholic solution and thus we can claim that the hydro alcoholic solution is more effective than the alcoholic solution.

This investigation also explains the importance of *Cucurbita pepo* seeds in treating various pathological diseases and infections.

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