Cropex®
Safe Agriculture, Since 1998!

PRODUCT	**ORGANIC ANTI-BACTERIAL & ANTI-VIRAL**
CODE	**BP10 – POWDER/LIQUID (ORCON)**

Composition	**Ingredient**	**Powder**	**Liquid**
	Eugenol	01.00% w/w min.	01.00% w/v min.
	Potassium Salt of fatty acids	06.00% w/w min.	99.00% w/v max.
	Sodium salts	93.00%w/w max.	-

Target
Bacterial diseases like Leaf Blight, Leaf Spot, Cankers etc. in Tomato, Potato, Rice, Carrot, Cucurbits etc. This highly effective formula also manages viral diseases like Leaf Curl Virus, Yellow Mosaic Virus etc. on Chilli, Okra, Tomato, Papaya, Cucurbits, Cotton, Spices etc.

Mode of Action
As Anti-Bacterial: Eugenol in clove oil has both anti-bacterial and bacteriostatic action. It induces the cell lysis by the leakage of protein and lipid contents thus damaging the cell wall and cell membrane of the both Gram positive and Gram negative bacteria. Hydrophobicity of Eugenol enables to partition the lipids of the bacterial cell membrane and mitochondria, thus disturbing the cell structures and rendering them more permeable for its anti-bacterial action. Eugenol denatures proteins and reacts with cell membrane phospholipids changing their permeability and inhibiting a great number of Gram-negative and Gram-positive bacteria. Thus, primary mechanism of action of eugenol is disruption of the cytoplasmic membrane, which increases its non-specific permeability allowing Eugenol to be dissolved in the membrane and accumulate with consequent damage to the membrane.

As Anti-Viral: Eugenol directly inactivates the free-virus particles and interferes with virion envelope structures required for entry into host cells. Eugenol ameliorates the oxidative stress and inhibits the expressions of autophagic genes finally impairing the viral strain replication. This results in causing nonspecific and nonproductive binding to host cells preventing a successful infection. Eugenol may act directly upon the virus envelope inhibiting postbinding entry of the virus into cells. A slow buildup of Eugenol on the surface of the capsid over time leads to greater reductions in cell culture infectivity.

How to Apply
Mix the recommended quantity thoroughly in sufficient amount of water & spray on both sides of the leaves / affected areas.

Shelf Life
3 years from the date of manufacture.

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Antidote
No specific antidote. Treat symptomatically.

Dosage
4-5 g / 4-5 ml per litre of water

Studies Done
Bio-efficacy

Product	University	Disease Studied
BP10 Powder	University of Agricultural Sciences, Dharwad	Crop: Tomato Alternaria Leaf Blight Leaf Curl Virus
BP10 (Orcon) Powder	Mahatma Phule Krishi Vidyapeeth, Rahuri	Crop: Chilli Leaf Curl Virus Phytotoxicity

Non-toxicity & Biodegradation	National Toxicology Centre, Pune
Free from Pesticides	Reliable Analytical Lab., Mumbai
Organic Approval as per NPOP (by APEDA)	1. IMO Control 2. VOCA

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DETERMINATION OF EUGENOL

Determine by gas chromatography (2.4.14). Reference: IP 2007 p: 1395

Test solution (a). A 0.2 per cent w/v solution of the oil under examination in ethanol (95 per cent).

Test solution (b). A 0.2 per cent w/v solution of the oil under examination and 0.15 w/v of 1-decanol (internal standard) in ethanol (95 per cent).

Reference solution. A solution containing 0.2 per cent w/v solution of eugenol RS and 0.15 per cent w/v of the internal standard in ethanol (95 per cent).

Chromatographic system
– a glass column 1.5 m x 4 mm, packed with 3 per cent w/w of dimethyl silicone fluid on acid-washed diatomaceous support (120 mesh),

– temperature:
column.110º for 18 minutes, then increased to 170º at a rate of 12º per minute and maintained at this temperature for 2 minutes, inlet port. 220º,
detector. 300º,

– flow rate 40 ml per minute of the carrier gas.

Calculate the eugenol content in the oil under examination using the ratios of the area of the peak corresponding to eugenol to the area of the peak due to the internal standard in the chromatogram obtained with test solutions (b) and the reference solution.

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DETERMINATION OF TOTAL FATTY MATTER
(AS PER IS 286: METHODS OF SAMPLING AND TEST FOR SOAPS)

General — The soap split by dilute sulphuric acid is extracted by ethyl ether as in the determination of combined alkali and the ether extract evaporated. The residue is treated with acetone, evaporated and estimated.

Reagents:
Dilute Sulphuric Acid — 1 : 1 (v/v).
Methyl Orange Indicator — Dissolve 0.1 g in 100 ml of water.
Sodium Chloride Solution — saturated.
Ethyl Ether — See IS : 336-1973*.
Acetone — pure (see IS : 170-l966†).
Procedure:
Accurately weigh 5 to 10 g of the sample, and dissolve in 250-ml conical flask by warming [Specification for ether (second revision). 22 IS : 286 – 1978] in 100 ml of water. When dissolution is complete, add dilute sulphuric acid in slight excess (as judged by methyl orange indicator), insert a small funnel into the neck of the flask, and heat the flask to a temperature not exceeding 60°C until the fatty acids separate as a clear layer. Add 50 ml of sodium chloride solution and cool. Transfer quantitatively to a separating funnel, draw off the aqueous acid layer into a second separating funnel and shake it with three 50-ml portions of ethyl ether. Dissolve the fatty acids in the ether used for washing the aqueous liquid and extract with 10-ml portions of water until the extracts are no longer acidic to methyl orange indicator. Mix the water portions used for washing and shake with 20 ml of ether. Wash this ether until the wash water is neutral to methyl orange indicator.

Distil off the ether slowly on a steam-bath, and, to the residue, add 5 ml of acetone. (In order to minimize the risk of loss during distillation, the flask should not be more than half full of ether at any stage.) Warm the flask on the steam-bath for about one minute, remove it from the bath and then, while imparting a rotatory motion to the flask hold it at an angle of 45°, direct a current of dry air into its mouth for about one minute, thereby removing the bulk of acetone. Place the flask in a steam-oven at about 90°C for 10 minutes, remove it from the oven and blow with air as before for about 15 seconds. Allow the flask to cool and weigh. Return the flask to the steam-oven for another 10 minutes and blow for 15 seconds. Allow to cool and reweigh. Repeat the process until the difference between two consecutive weighings is less than 0.005 g.

Calculation

$$\text{Total fatty matter, percent by mass} = 100 \times \frac{M1}{M2}$$

Where
M1 = mass in g of the fatty matter, and
M2 = mass in g of the material taken for the test.

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DETERMINATION OF TOTAL SOLIDS

Scope and Application
Total Solids are defined as the material residue left in a vessel, after evaporation of moisture from a sample.

Equipment and Supplies
1. Petri dish or suitable moisture dish.
2. Drying oven equipped with thermostatic control capable of maintaining temperature within $2^{O}C$ range
3. Desiccator - with desiccant
4. Analytical balance - capable of weighing to 0.1 mg

Preparation
Petri dish / Moisture dish Preparation: Place prenumbered dishes into a 180ºC drying oven and dry for five days to a constant weight.
Transfer dried dishes to desiccator(s) and allow to stabilize overnight.
Record dish numbers to be used on the Data Summary and Weight Record data sheets.

Method of Analysis:
1. Tare the balance to zero.
2. Weigh clean, dry, empty dish.
3. Record weight on the Weight Record data sheet.
4. Add approximately 5 gm or 5 ml of sample to the dish and record the exact weight.
5. Place the petri dishes with sample in a hot air oven preset at 110OC.
6. Allow the sample to dry for 3 - 4 hours till uniform dryness.
7. Take out the petri dish with dried sample and place in a desiccator and allow to cool.
8. Weight the dish and record the weight.
9. Determine the TS content of liquid samples or TS content of solid samples by using following formula:

$$\text{TOTAL SOLIDS} = \frac{W3 - W1}{W2 - W1} \times 100\ \%$$

Where, W1 = Weight of empty dish
W2 = Weight of dish + sample
W3 = Weight of dish + dried sample
10. Express the results as % TDS for liquids or % TS for solids