

Saluyot corchorus olitorius leaves extract as antibacterial dishwashing liquid

[Science](#), [Biology](#)



People living in developing countries depends primarily on traditional plants as a source for treating diseases by killing microorganisms such as *E. coli* and *Salmonella* that causes diseases and illness in the body. One of such common plant available in developing countries like Philippines is *Corchorus olitorius* also known as Jute or Saluyot. *C. olitorius* is edible and has a mucilaginous texture. Its leaves are rich in betacarotene, iron, calcium, and vitamin C. It has an antioxidant activity with a significant α -tocopherol equivalent vitamin E. With the use of this traditional plant, the researchers would like to test the effectiveness of Saluyot leaves extract in killing such microorganisms as mention above.

Escherichia coli are a Gram-negative, facultative anaerobic, rod-shaped, coliform bacterium of the genus *Escherichia* found in the lower intestine of warm-blooded organisms (endotherms). Most of the strains are harmless, but some can cause serious food poisoning. It constitutes about 0.9% of gut microbiota, and fecal-oral transmission is the major route of this bacterium cause disease. This can be grown and/or cultured easily and inexpensively in a laboratory. *Salmonella* is another microorganism from a genus of rod-shaped (bacillus) Gram-negative bacteria of the family Enterobacteriaceae. Species are non-spore-forming, predominantly motile enterobacteria with cell diameters of about 0.7 to 1.5 μm , and a length of 2 μm to 5 μm , and peritrichous flagella. Also a facultative anaerobes, capable of generating ATP with and without oxygen. Species are intracellular pathogens and certain serotypes cause illness. It can transfer from animal-to-human and from human-to-human; and usually invade only in the gastrointestinal tract and can cause food poisoning, typhoid fever, and paratyphoid fever.

Nowadays, washing dishes is one of the major chores that people are facing every day. The real purpose of this study is to produce a product out of Saluyot leaves extract as an antibacterial agent in an antibacterial dishwashing liquid. With these, the student researchers will be evaluating the Saluyot leaves extract as a potential antibacterial agent. This study shows how simple organic materials that are easily found elsewhere can turn into something useful as antibacterial dishwashing liquid.

MATERIALS AND METHODS

Experimental Design

In the experimental set-up, six petri dishes were used and divided into two: three petri dishes for *E. coli*; and three petri dishes for *Salmonella*. Each petri dish is divided into four quadrants; each quadrant is mark with the corresponding experimental plant concentrations and the control group. Every quadrant contains filter paper soaked in the Saluyot leaves extract.

Preparation Plant Sample

The Saluyot (*C. olitorius*) leaves were collected from Purok-3, Antequera, Nabunturan Compostela Valley Province. The collected leaves of (*C. olitorius*) were washed with running water and were air-dried for two days before homogenizing it using a blender. Preparation of the *C. olitorius* Leaf Ethanolic Extract

The dried leaves were homogenized or powderized; weight was measured. The homogenized leaves were soaked in ethanol for 36 hours in a tightly closed container with a ratio of 1: 2 or 500 mL of homogenized leaves and

1000 mL ethanol. After 36 hours, the soaked leaves were filtered and the filtered extract were stored in a clean container with cover.

Modified Evaporation of Ethanolic Extract

The modified evaporation process was performed after extract were being filtered; this process will separate the ethanol from the extract. The extract of *C. olitorius* were heated in a hot plate at 380°C for 4 hours. After this process, the filtrate extract were store in the refrigerator until further use.

Collection of Microorganism

The microorganisms *E. coli* and *Salmonella* were purchased from the Department of Science and Technology (DOST), Davao City, Philippines. The purchased microorganisms were stored in the Biotechnology Laboratory of the school campus (NNCHS) until its further use.

Preparation of the Nutrient Agar

In a beaker, pour 25g of agar in a 1L of distilled water. Mix the solution through stirring while being heated. The nutrient agar was distributed into different petri dishes equally and was set to cool down.

Sterilization of Laboratory Materials

The laboratory materials were sterilized before and after experimentation to avoid contamination of bacteria in the working place. The materials were placed in the autoclavable bag and were sterilized in the autoclave at 121°C at 15 psi.

Inoculation of the Bacteria

Each petri dish with the nutrient agar were divided into four quadrants labelled as 35%, 75%, 50%, and control group. The bacteria *E. coli* and *Salmonella* were placed evenly in the petri dish using an inoculating loop. The Saluyot leaves extracts were also divided into different concentrations 35%, 75%, and 50% respectively. Filter papers with 6mm in diameter were soaked in the different concentrations of Saluyot leaves extracts and were placed in the centre of each quadrant. The experimental set-up were placed in the laminar flow hood for about 24 hours, and result were observed and were recorded.