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# A Study to Evaluate the Antibacterial Activity of Squilla Maritima Against Stretptococcus Pneumonia: In Vitro

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**ABSTRACT**
This study aims to evaluate the antibacterial properties of Squilla maritima, a homoeopathic medicine, against Streptococcus pneumonia, a common pathogen in the human upper respiratory tract. The Agar Well-Diffusion test will be used to screen the bacteria at 30C and 200C potencies.
**Result:** Squilla maritime 30C (0.8±0.1), 200C (0.6±0.1) cm. showed inhibitory activity against Streptococcus pneumonia by Agar well-diffusion assay. Squilla maritima 30 showed maximum Growth inhibitory zone (GIZ) against Streptococcus pneumonia. But Vehicle control (Dispensing alcohol or ethanol 90%) showed 10mm of Growth inhibitory zone which is more than squilla 30C.
**Conclusion:** This experiment showed that the homoeopathic medicine Squilla maritima has antibacterial property against Streptococcus pneumonia which is less effective than dispensing alcohol.

**Keywords**: Squilla maritima, Empirical treatment, Streptococcus pneumoniae, Zone of inhibition.

## 1. INTRODUCTION

Pneumococci, also known as streptococcus pneumoniae, are gram-positive, lanceolate-shaped diplococci. These are typical occupants of the upper respiratory tract in humans. These are the most common bacterial agents in children's otitis media and pneumonia. Infections such as bacteremia, meningitis, sinusitis, and bronchitis can also be brought on by them. Independent observations of S. pneumoniae were made in 1881 by Pasteur and Sternberg[1],[2]. However, Fraenkel and Weichselbaum independently discovered the connection between the microbe and pneumonia only a few years later, in 1886. One of the most frequent bacteria that cause both bronchopneumonia and lobar pneumonia is S. pneumoniae. They also result in empyema and acute tracheobronchitis. [1]

It is not uncommon for nasopharyngeal secretions carrying S. pneumoniae to be aspirated into the lower respiratory tract, even when the patient is asleep[1],[3]. The ciliary escalator effect helps normal mucosal defence systems such trapping, ejection, and the cough reflex avoid the spread of infection[2],[4]. S.pneumoniae multiplies, penetrates the bronchial mucosa, and spreads throughout the lung along the lymphatics of the peribronchial tissues when the body's natural defences are undermined by a virus, anaesthesia, cold exposure, or other circumstances[5], [6]. Early-stage lobar pneumonia frequently involves bacteremia. Diffusion of the capsular polysaccharide into the blood and tissues is the cause of toxicity.

The neutralisation of SSS by anticapsular antibodies corresponds with the reduction in temperature caused by a crisis and the alleviation of symptoms. Almost always, bronchopneumonia results from a subsequent infection[6]. S.pneumoniae of any seratype could be the cause of this. S.pneumoniae can more easily infiltrate the bronchial tree due to the original infection's damage to the respiratory epithelium and increased secretions from the bronchi. In elderly and disabled patients, broncho pneumonia frequently results in death [1], [7].

## 2. AIM

To determine the zone of inhibition developed by the administration of Squilla maritima against Streptococcus pneumonia.

## 3.METHODOLOGY:

The study involved suspending bacterial colonies in nutrient broth from a 24-hour-old pure culture plate and adjusting the concentration to 1×108 CFU/ml. The inoculum was kept at 4°C for further research. Muller Hinton agar plates were used for antibacterial screening. A sterile disc was prepared from Hi media and soaked with different extract concentrations. The disc was air-dried for six hours before being labelled for antibacterial study. The zone of inhibition was measured in millimeters, with no activity considered when there was no zone inhibition. Activities were classified as resistant if the zone was less than 7 mm, 8-10 mm, or 11 mm, respectively.

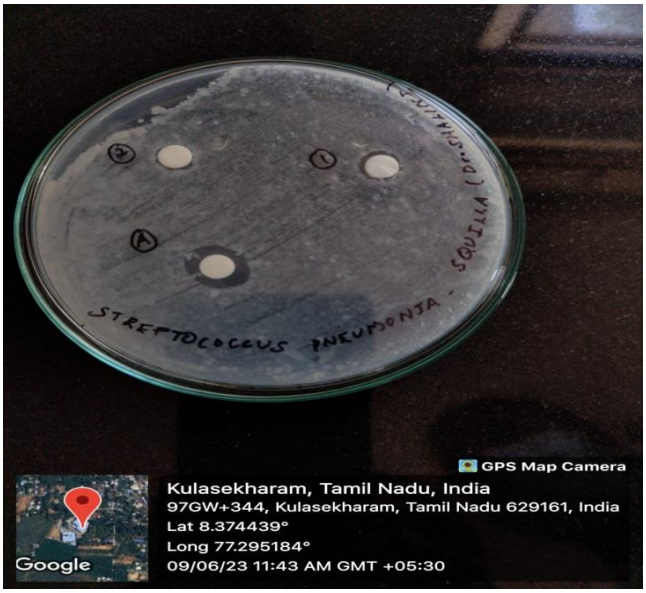


**Figure1: Antibacterial Assay Of Homoeopathic Medicine And Control By Kirby-Bauer Method In Streptococcal Pneumonia**

**TABLE 1: Zone Of Inhibition Of Streptococcal Pneumonia And Control By Kirby-Bauer Method**

| Bacterial strain | Potency | Inhibition zone |
|---|---|---|
| Streptococcus pneumoniae | 30c | 8mm |
| | 200c | 6 mm |
| | PL (Dispensing alcohol) | 10mm |

## 4. OBSERVATION & RESULT:

There was a zone of sensitivity on the plate. However, the outcome varied depending on the potencies. The current investigation revealed a minimal growth inhibition zone of 8 mm for Squilla maritime at the 30th potency and 6 mm for Squilla maritima at the 200th potency. In all three studies, the GIZ of ethanol remained consistent at 10 mm.

## 5. DISCUSSION:

Pneumonia is a common and deadly illness caused by various bacteria. Homoeopathic medicines, such as Squilla maritima, have strong antibacterial action for various species. A study assessed the potency of Squilla maritima in inhibiting streptococcus pneumonia in vitro. The results showed a larger zone of inhibition on Squilla maritima 30 compared to ethanol 90%. The study suggests that Squilla maritime 30 can be used as an empirical antibiotic if streptococcus pneumonia is clinically suspected.

Hahnemann's interpretation of Aphorism 27 in the Organon states that medicine's curative power depends on producing symptoms similar to and stronger than the disease. In a treatment trial, Squilla maritima caused broncho pneumonia symptoms in patients, including a productive cough, dyspnea, chest stitches, and abdominal muscle contractions, demonstrating the similarity of these symptoms.

## 6. CONCLUSION

This study unequivocally demonstrates that Squilla maritima 30, 200, a homoeopathic medication, can stop S. pneumonia from growing, especially at the 30th potency. In comparison to administering alcohol, this experiment demonstrated the antibacterial properties of the homoeopathic medication Squilla maritima against Streptococcus pneumonia. It doesn't imply that Squilla maritima is ineffective; rather, it suggests that more studies with stronger potencies are needed to demonstrate its antibacterial efficacy.

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