

# Evaluation of the diagnostic Utility of the New product “Zone Measurable Petridish” in Antimicrobial Susceptibility Testing.

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**Abstract -Background & Objectives:** Innovative ideas are always encouraged by the researchers. A successful innovation can improve the clinical diagnostics in near future. Here we are introducing a new product with its novelty in diagnostic usage. Name of the product is Zone Measurable Petridish. Patent application number from the patent office for this product is 202141008624 dated 1.3.2021. This is a glass petridish with zones of varying diameter is imprinted so that we can measure the zone of inhibition without a scale.

**Aim of the study** is to assess the utility of the new product in routine diagnostic work. **Materials & Method:** Prototype was prepared and used it for routine Antibiotic susceptibility testing. This was shown and explained to Faculties, Technicians and Students. Then its utility in Microbiology Lab was assessed using a questionnaire validated by experts. Five point Likerts scale was used to assess the importance of interpretation in antimicrobial susceptibility testing and also about the utility of the new product.

**Results:** All participants were strongly agree that the use of this new product in concern with its feasibility, Novelty and for accurate measurement of inhibition zone when compared to currently available petridish. **Conclusion:** The new product has many advantages over the currently using petridish. It is Very Easy to measure zone of inhibition. Accurate measurement can be achieved during reporting. It will help to avoid individual variation in measuring the zone size.

**Index Terms**—Disc diffusion, Petridish.

## INTRODUCTION

Innovative ideas are always encouraged by the researchers. A successful innovation can improve the clinical diagnostics in near future. Here we are introducing a new product with its novelty in diagnostic usage. Name of the product is “Zone

Measurable glass Petridish”. Patent application number from the patent office for this product is 202141008624 dated 1.3.2021. This is a glass petridish with zones of varying diameter is imprinted so that we can measure the zone of inhibition without a scale.

Advantages claimed are the following

- Time saving & Easy to measure the zone of inhibition.
- Avoid using scale for measuring zone size.
- Useful for untrained technicians also.
- Accurate measurement can achieve.
- Avoid individual variation in measuring the zone size.
- Zone sizes can be verified from the photograph of the AST Plate.
- Not much technical caliber is required to use this product.
- As circular markings are permanent, it will not disappear or get fade even after repeated usage.
- As circular markings are in color, it will be much easier to read.

Our aim is to assess the utility of the new product “Zone Measurable glass Petridish” in routine diagnostic work.

## MATERIALS AND METHODS

Prototype ( Fig 1A) was prepared and used it for routine Antibiotic susceptibility testing. Circular markings were drawn with varying diameter starting from 10mm to 30mm, a total of six circles drawn from inner to outer .ie, 10mm,14mm, 18mm, 22mm, 26mm & 30mm. At the Centre 6mm size dot in red or brown in color. Usually in disc diffusion method, the zone of

inhibition will be measured using a normal scale or specific scale used for this purpose.(Fig 1B). Here we used the prototype for Antibiotic susceptibility testing. After incubation the zone of inhibition were measured without the use of scale, as the imprinted circles are there around the antibiotic discs. This was shown (Fig 1C) and explained to Faculties (14), Technicians (10) and Students (15). Then its utility in Microbiology Lab was assessed by collecting their opinion. Then its utility in Microbiology Lab was assessed using a questionnaire validated by experts. Five-point Likerts scale was used to assess the importance of interpretation in antimicrobial susceptibility testing and also about the utility of the new product

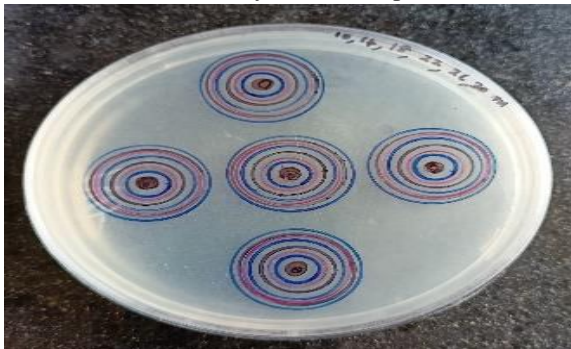


Fig 1A. Prototype



Fig 1B. Routine way of measuring using scale



Fig 1C. Reading without scale

RESULTS AND DISCUSSION

A total of 39 participants involved in this study. Of which 14 Faculties, 10 Technicians and 15 Students were included this study. Students include MD and MSc Postgraduates of Microbiology and BSc MLT interns. Importance of accurate measurement of zone size in Disc Diffusion method and Usefulness of Zone measurable petridish in Disc diffusion method were assessed. More than 90% of them agreed that disc diffusion method is the most commonly using, easy method to check antimicrobial susceptibility testing.(Fig 2)

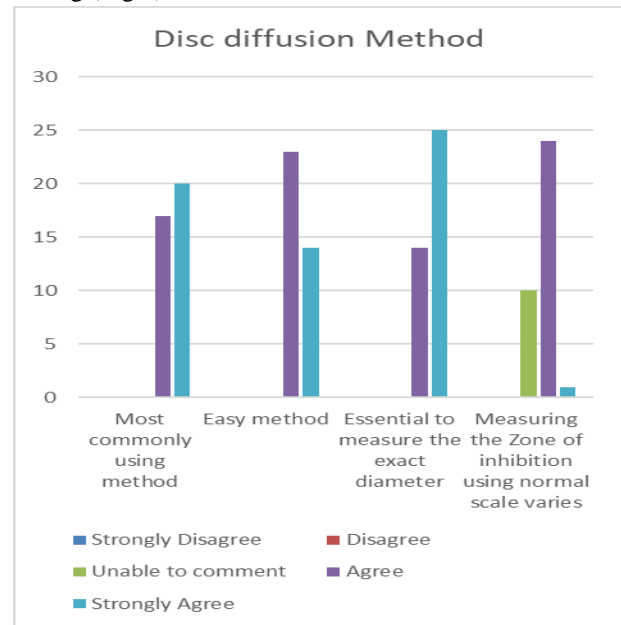


Fig 2. Importance of accurate measurement of zone size in Disc Diffusion method

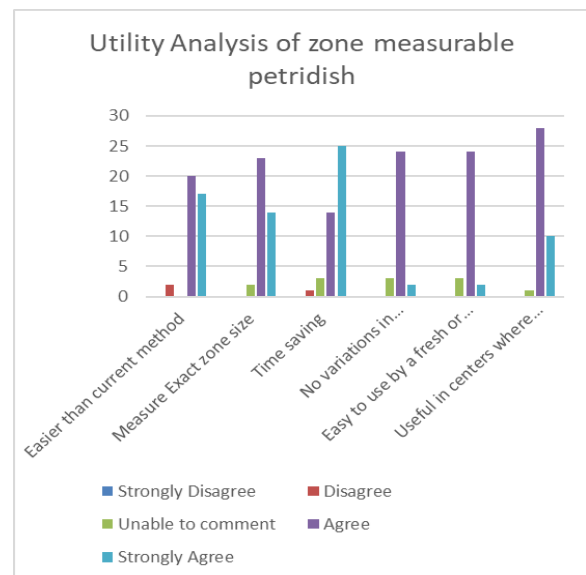


Fig 3. Usefulness of Zone measurable petridish in Disc diffusion method

The advantages claimed by us was accepted strongly by the participants .They strongly agreed that the use of this new product will help in measuring the zone of inhibition accurately. Possibilities of manual error for measuring the zone of inhibition is very minimum. As it is time saving, this will be very useful in centers where sample size is more. Easy to handle by untrained technicians also ( Fig 3). Although automations are introduced for diagnostic work, conventional methods still used by many laboratories.

### CONCLUSION

This new product in concern with its feasibility and Novelty for accurate measurement of inhibition zone when compared to currently available petridish is very high. It has got many advantage over currently using petridish. Hope this product will be in market soon for laboratory use because of all these advanced features.