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# PYR STRIPS

## Rapid test strips for the detection of pyrrolidonyl amino peptidase activity in streptococci and enterococci

### Introduction

Both *Enterococcus* spp and *Streptococcus pyogenes* (Lancefield Group A Streptococci) are frequently isolated from clinical specimens and can cause a variety of severe infections in adults and children.

The clinical significance of *Enterococcus* spp has been highlighted by the emergence of strains resistant to the recommended synergistic combination therapy of penicillin or ampicillin, with an aminoglycoside antibiotic[1], while *S.pyogenes* is re-emerging as a major pathogen associated with an increasing incidence of rheumatic fever[2] and streptococcal toxic shock.[3] Early recognition of these pathogens is important to allow the initiation of effective therapy and presumptive tests for the identification of *S.pyogenes* and enterococci include a number of inexpensive and simple techniques, such as bacitracin sensitivity[4] (Mast Bacitracin Discs Order code D40, D41, D40C, D41C.)

In 1981, Godsey *et al*[5] described the colourimetric detection of L-pyrrolidonyl-β-naphthylamide (PYR) hydrolysis for the presumptive identification of streptococcal and enterococcal isolates. Compared to traditional tests, the rapidity of enzymatic testing using chromogenic or fluorogenic substrates is a considerable advantage and subsequent modifications have permitted the detection of PYR hydrolysis within 10 minutes on a convenient and economical paper strip[6].

Investigations have shown that the hydrolysis of PYR by the enzyme pyrrolidonyl amino peptidase is a characteristic of both enterococci and *S. pyogenes* but, absent in other streptococci.[7,8] The use of the PYR test in preference to the bacitracin test for *S.pyogenes* and the 6.5% NaCl tolerance test for enterococci has also been proposed.[9,8]

Further differentiation of *S.pyogenes*, enterococci and also group D non-enterococci can be achieved using the Mast Aesculin Strip test (order code ET06). The use of these and PYR strips in conjunction with the MASTASTREP Acid Extraction Reagents (order code RST220) is particularly recommended.

### Description

Filter paper strips 5.7cm by 0.6cm (impregnated with L-pyrrolidonyl-β-naphthylamide) printed to identify the positive and negative control and test areas.

### Directions

1. Moisten a strip by briefly immersing in deionised water and place it on a clean microscope slide.

2. Using a wooden applicator stick remove 2-3 colonies from the test culture and gently rub onto the test area of the strip.

3. Similarly, apply a sample from a known PYR positive and a known PYR negative strain to the appropriate areas of the strip to act as controls.

4. Incubate at 37ºC for 5 minutes and apply approximately 10µl of DMACA reagent to each organism applied. Record any colour developed within 30 seconds.

   DMACA Reagent - 0.1% w/v p-Dimethyl aminocinnamaldehyde (Order Code D14040-6) in 1M HCl.

### In Use

Development of a fuschia pink colour is a positive result, indicating that the organism is either *S.pyogenes* or *Enterococcus* spp.

Pyrrolidonyl amino peptidase negative organisms shown no colour change.

Note: Organisms other than streptococci or enterococci e.g. certain *Klebsiella* spp may appear PYR positive. Only catalase negative, Gram positive cocci should be tested.

Contd...

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## Limitations

A small proportion of group A streptococci are unable to hydrolyse PYR.

*Streptococcus suis* (non enterococcal group D streptococcus) has been reported to be PYR positive.

## Packaging & Ordering Details

MAST PYR Strips are presented as packs of 25 impregnated filter paper strips. Order Code: ET07.

## Storage

Store at 2-8ºC in the aluminium tin provided. Replace tape around the lid after use. Allow the tin to equilibrate to room temperature before opening.

## References

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7. Facklam RR, Thacker LG, Fox B, Eriquez L. Presumptive identification of streptococci with a new test system. *J. Clin Microbiol.* 1982; **15:** 987-990.