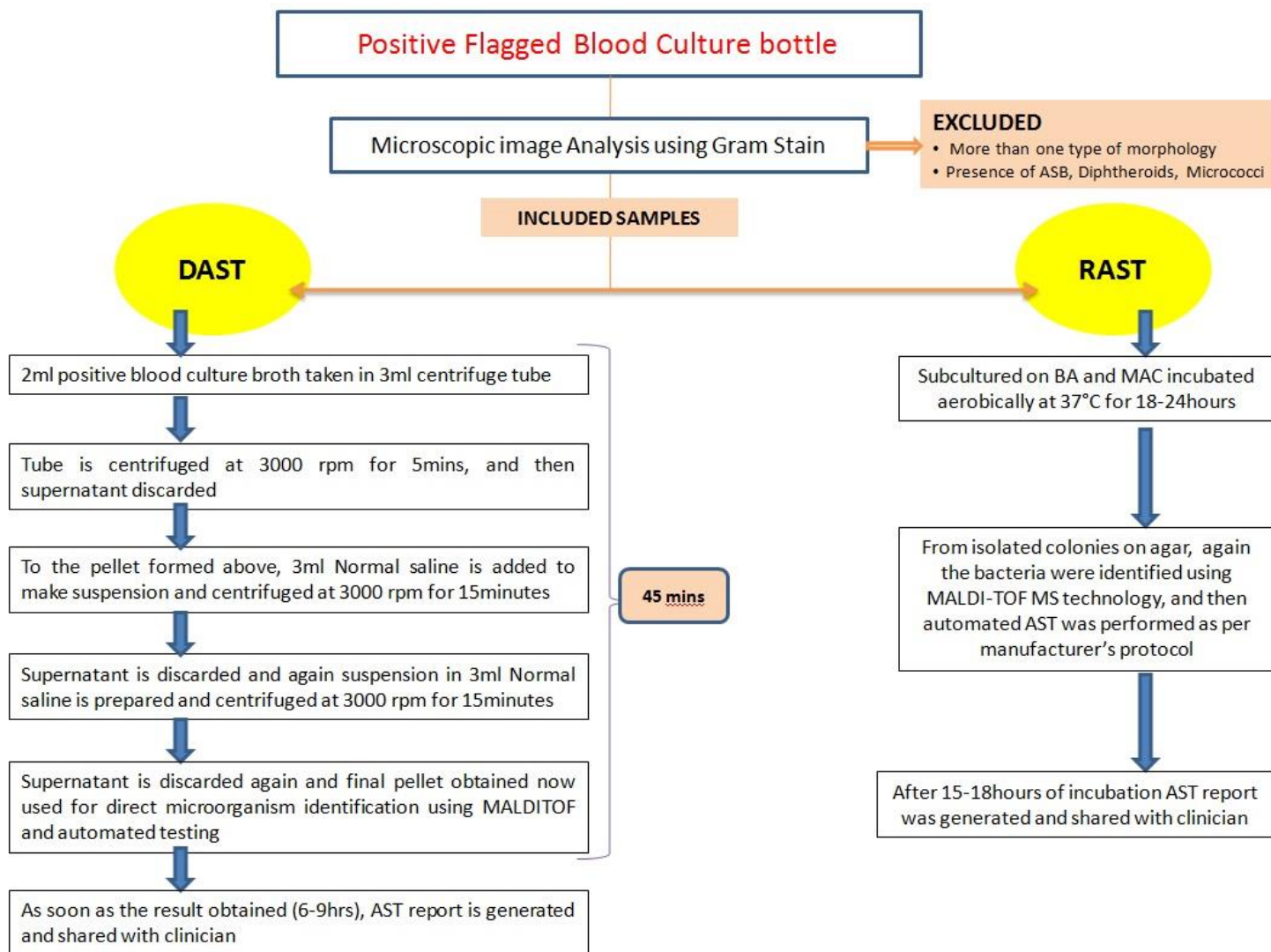


**Supplementary file**

**1. Flowchart of Methodology**



**2. Distribution of Exotic GNB**

Name of Microorganisms	Number of Isolates
Burkholderia cepacia complex	9
Elizabethkingia meningoseptica	4
Chryseobacterium indologenes	2

### 3. Statistical Tool

Difference in time taken to release the report for Gram-Negative Bacteria

Microorganisms	DAST Time in minutes	RAST Time in minutes
<i>Escherichia coli</i>	625	1765
<i>Klebsiella pneumoniae</i>	650	1997
<i>Pseudomonas aeruginosa</i>	900	2128
<i>Acinetobacter baumannii</i>	955	2227
<b>Average Time</b>	<b>755.00</b>	<b>2029.25</b>

Method for calculating the mean difference between the observed Means in two independent samples of Gram Negative Bacteria (Direct AST and Standard AST) Using the t-test for two in independent samples, t-test statistic given below-

$$t = \frac{(\bar{x}_1 - \bar{x}_2)}{s_p \sqrt{1/n_1 + 1/n_2}} \quad \text{Where, } t\alpha, n_1 + n_2 - 2$$

Where  $s_p$  is the sample standard deviation calculating using given formula

$$s = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$$

And  $\alpha$  is the limit of significance that is 5%,  $n_1$  is the sample size for Direct AST &  $n_2$  is the sample size for Standard AST.

Mean of Direct AST method	<b>755.00 min (<math>\bar{x}_1</math>)</b>	Direct AST data
Standard deviation for Direct AST Method	<b>160.208 min (<math>s_1</math>)</b>	
Sample size for Direct AST	<b>120 (<math>n_1</math>)</b>	

Mean of Standard AST method	<b>2029.25min (<math>\bar{x}_2</math>)</b>	Standard AST data
Standard deviation for Standard AST	<b>199.700 (<math>s_2</math>)</b>	
Sample size for Standard AST	<b>120 (<math>n_2</math>)</b>	

Mean difference - **1274.250 minutes** (Standard AST time - Direct AST Time)T-

statistic value – **54.522**

DF Value-**238( $n_1+n_2-2$ )**

P-value: **P < 0.0001 Significance level**

This procedure calculates the difference between the observed means in two independent samples. A significance value (P-value) and 95% Confidence Interval (CI) of the difference is reported. The P-value is the probability of obtaining the observed difference between the samples if the null hypothesis were true. The null hypothesis is the hypothesis that the difference is 0.

The P-value is the area of the  $t$  distribution with  $n_1 + n_2 - 2$  degrees of freedom that falls outside  $\pm t$ .

When the P-value is less than 0.05 ( $P < 0.05$ ), the conclusion is that the two means are significantly different.

**Difference in time taken to release the report for Gram-Positive Bacteria**

<b>Microorganisms</b>	<b>DAST</b>	<b>RAST</b>
	<b>Time in minutes</b>	<b>Time in minutes</b>
<i>Staphylococcus aureus</i>	695	1935
Coagulase negative <i>Staphylococcus</i>	690	1865
<i>Enterococcus spp</i>	770	2170
<b>AverageTime</b>	<b>698.33</b>	<b>1990.00</b>

Method for calculating the mean difference between the observed Means in two independent samples of Gram Positive Bacteria (Direct AST and Standard AST) Using the t-test for two independent samples, t-test statistic given below-

$$t = \frac{(\bar{x}_1 - \bar{x}_2)}{s_p \sqrt{1/n_1 + 1/n_2}} \quad \text{Where, } \alpha, n_1 + n_2 - 2$$

Where  $s_p$  is the sample standard deviation calculating using given

formula

$$s = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$$

And  $\alpha$  is the limit of significance that is 5%,  $n_1$  is the sample size for Direct AST &  $n_2$  is the sample size for Standard AST.

Mean of Direct AST method	<b>698.33min (<math>\bar{x}_1</math>)</b>	Direct AST data
Standard deviation for Direct AST Method	<b>36.85 min (<math>s_1</math>)</b>	
Sample size for Direct AST	<b>60 (<math>n_1</math>)</b>	

Mean of Standard AST method	<b>1990.00min (<math>\bar{x}_2</math>)</b>	Standard AST data
Standard deviation for Standard AST	<b>159.76 (s)</b>	
Sample size for Standard AST	<b>60 (<math>n_2</math>)</b>	

Mean difference - **1291.670 min** (Standard AST time - Direct AST Time)T-

statistic value – **61.024**

DF Value-**118( $n_1+n_2-2$ )**

P-value - **<0.0001 Significance level**

This procedure calculates the difference between the observed means in two independent samples. A significance value (P-value) and 95% Confidence Interval (CI) of the difference is reported. The P-value is the probability of obtaining the observed difference between the samples if the null hypothesis were true. The null hypothesis is the hypothesis that the difference is 0.

The P-value is the area of the  $t$  distribution with  $n_1 + n_2 - 2$  degrees of freedom that falls outside  $\pm t$ .

When the P-value is less than 0.05 ( $P < 0.05$ ), the conclusion is that the two means are significantly different.

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