

# COMPARATIVE STUDY ON ARTIFICIAL URINE SAMPLES WITH CONTROL AND TESTING EFFICACY BY DIPSTICK AND MANUAL ANALYSIS

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## ABSTRACT

Artificial urine has more comfortable and safety over human urine for nurse and doctors, allied health science use artificial urine for their training purposes. The study demonstrates the efficiency of artificial urine added abnormal constitutes results are interpreted by dipstick method and manual methods by using against control. Prepared two different types of artificial urine and the P<sup>H</sup> was adjusted within 5 -8 ranges, the abnormal constitutes such as glucose, protein acetone, blood, glucose, bilirubin, are added to the artificial urine tested by dipstick method and manual test against control. In this study results showed, both artificial urine samples added abnormal constitutes results were very similar to the control urine.

**Keywords:** Artificial urine, Control urine, Dipstick method. Manual test, Abnormal constitutes

## 1. INTRODUCTION

Urine is made of water 95% and nitrogenous 5% waste including urea, ammonia, creatinine, uric acid are normal constituents. Artificial urine refers as synthetic urine by laboratory created solution that resemble as the chemical composition of human urine. the simple artificial urine used for calibration of urine testing equipment in laboratories and used in research setting for experimental purposes. In mainly to laboratory safety practice of students to technological competence in artificial urine to eliminate the contamination. the artificial urine prepared and tested against control human sample by dipstick method and manual methods for encountering efficiency .

## 2. MATERIALS

**Study place:** MMM college of health sciences, Chennai

**Duration:** November -2023 (1 Month)

**Selection of artificial urine:** Components are recommended by authors.

**Method of artificial urine preparation:**

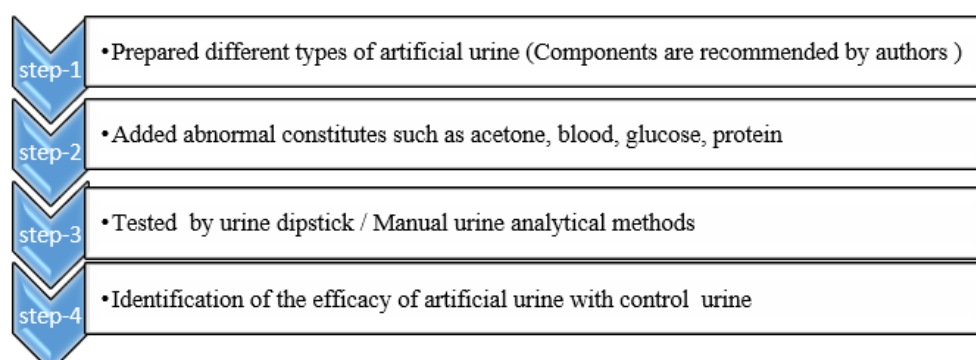
**Sample I:** 100ml of distilled water with Urea-25g, Sodium chloride-9g, Disodium hydrogen orthophosphate anhydrogen-2.5g, Ammonium chloride-3g, Creatinine-2g, Potassium di hydrogen orthophosphate-2.5g. Adjust the PH 5-7 range.

**Sample II:** 100ml of distilled water with Urea -17.3mg, Sodium chloride-1.41mg, Potassium chloride - 0.280mg, Calcium chloride-0. 50mg, Ammonium chloride-0. 50mg, HCL-0.73g. Adjust the PH 5-7 range.

**Adding abnormal chemical constitutes:**

The abnormal constitutes such as blood 50μl, acetone 40μl, glucose 250mg, protein 200mg, bilirubin 30g added to the sample I and II, control urine for positive reporting. Mix until the abnormal constitutes are dissolved.

## 3. METHODOLOGY







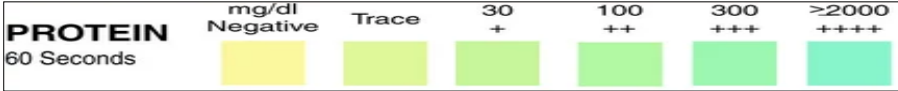















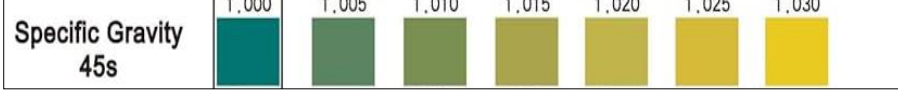



**Figure1:** Study Protocol.

## 4. RESULTS AND DISCUSSION

**Table 1.** Quantitative analysis report of strip method:

Sample type	Glucose	Protein	Ketone	Bilirubin	Blood	Specific gravity
Control	1+	1+	4+	1+	1+	1.010
Artificial urine sample -I	3+	1+	4+	1+	1+	1.005
Artificial urine sample -II	1+	4+	4+	1+	1+	1.010
















  

Result interpretation		Dipstick samples result		
<b>GLUCOSE</b> 60 Seconds 		Control	S-I	S-II
		 1+	 3+	 1+
<b>PROTEIN</b> 60 Seconds 		 1+	 1+	 4+
<b>Ketone</b> 40s 		 4+	 4+	 4+
<b>Bilirubin</b> 30s 		 1+	 1+	 1+
<b>BLOOD</b> 60 seconds 		 1+	 1+	 1+
<b>Specific Gravity</b> 45s 		 1.010	 1.005	 1.010

**Figure 2.**Quantitative analysis report of strip method:

**Table 2.** Quantitative analysis report of manual method

Sample type	Glucose	Protein	Ketone	Blood	Bilirubin
Control	1+	4+	1+	3+	1+
Artificial urine sample -I	2+	1+	1	3+	1+
Artificial urine sample -II	1+	4+	1+	2+	2+

Result interpretation	Manual methods samples results		
Glucose	Control	S-I	S-II
	 1+	 2+	 1+
Protein	 4+	 1+	 4+
Ketone	 1+	 1+	 1+
Blood	 3+	 3+	 2+
Bilirubin	 1+	 1+	 1+

**Figure 3.** Quantitative analysis report of manual methods:

## 5. CONCLUSION

The study demonstrates the efficiency of artificial urine added abnormal constitutes results are interpreted by dipstick and manual methods by using control urine sample. In this study results based on the chemical reaction shows, both artificial urine samples abnormal constitutes added results were similar to the control sample in dipstick method and manual method.

## ACKNOWLEDGEMENTS

My sincere thanks to **Dr. Deepa C Philip**, Principal, MMM College of Health Sciences, Mogappair, Chennai. 600 107, India.

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