

Urinalysis (lab 11)

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Introduction

The urinary system is essential to the human body as it provides many beneficial functions. The food and liquid that are consumed are broken down and absorbed within the body. However, the body absorbs the nutrients, but the wastes are maintained in the blood. This is where the kidneys come and help filter the blood by separating the toxins that the body doesn't need. Moreover, the urinary system consists of kidneys, ureters, bladder, and urethra. Each has a significant function that contributes to helping get rid of the toxins in the body. For instance, the wastes travel in the ureters from the kidneys to the bladder, which is stored and then exited through the urethra as urine (Marieb et al., 2016).

Additionally, urinalysis is the study of urine and it is used to detect infections or possible diseases within the urinary system. The urinalysis test examines glucose, bilirubin, ketone, specific gravity, blood, pH, protein, urobilinogen, nitrite, and leukocytes. It is a very common test as it provides a wide range of results to determine the status of the body. Another component of urinalysis is the observation of the appearance and components of the urine. The characteristic is analyzed separately for its color composition- yellowish amber (healthy), transparency-clear, and the odor should be odorless (Marieb et al., 2016). In fact, understanding the results gives an insight into what to expect. The urinalysis checks the overall health of the individual and diagnosis of diseases. The test is mainly used to detect urinary infections and kidney diseases. Knowing the issue can help patients in treating their sickness. The experiment consists of three artificial urine samples. Which its characteristic, organic and inorganic compounds would be observed. Each urine sample result will be recorded and analyzed to identify possible diseases/infections. In like manner, the purpose of the experiment is to learn how to identify the test readings and compare the results of the three given urine samples.

Methods/Materials

The samples used in the experiment are Normal Urine, abnormal urine-1, and abnormal urine-2. All were in their respective bottles and labeled, which helped in the identification of their characteristics. For instance, color and transparency are provided, but the odor is not available as is an online experiment. The samples were handled with gloves as a precaution of not contaminating it. Correspondingly, the labeled dipsticks are added to the samples for two minutes. Then, they are placed down in a paper towel to absorb the excess urine, which helps the dipsticks not contaminate the other samples. Furthermore, the dipstick is then compared with their results. The different colors of the dipsticks can identify the properties of glucose, bilirubin, ketone, specific gravity, blood, ph, protein, urobilinogen, nitrite, and leukocytes. Finally, after receiving the results are recorded and analyzed. After completing the experiment, the gloves will be disposed of, with the other used materials that are not needed after the recorded results.

Results

Table:

Physical Characteristics

Normal values	Results	Normal Urine Artificial	Abnormal Urine-1 Artificial	Abnormal Urine-2 Artificial
Pale Yellow	Color	Light pale yellow	Pale yellow	Light pale yellow
Transparent	Transparency	Clear	Cloudy	Clear
Odorless	Odor	N/a	N/a	N/a
4.5-8.0	PH (60 secs)	6.5	6.0	8.5
1.001-1.030	Specific Gravity (45 secs)	1.015	1.030	1.005

Inorganic component

Normal values	Results	Normal Urine Artificial	Abnormal Urine-1 Artificial	Abnormal Urine-2 Artificial
Negative	Nitrite (60 secs)	Negative	Negative	Negative

Organic Components

Normal values	Results	Normal Urine Artificial	Abnormal Urine-1 Artificial	Abnormal Urine-2 Artificial
Negative	Glucose(30 secs)	Negative	2000 +	1000
Negative	Bilirubin(30 secs)	Negative	Negative	Negative
Negative	Ketone (40 secs)	Negative	Small 15	Trace 5
Negative	Blood (60 secs)	Negative	Negative	large
150 and less	Protein (60 secs)	Negative	2000 +	2000 +
Present	Urobilinogen (60 secs)	0.2	0.2	0.2
Negative	Leukocytes (2 mins)	Negative	Negative	Negative

Conclusion/Discussion

The three samples provided different chemical results. The test simulates the result of the urine belonging to a normal/abnormal patient. Of course, the result will vary for each individual. In this case, The three samples given were artificial and had normal values within their color and transparency. Not to mention, the samples were tested for nitrite and leukocytes, which resulted in negative, this is a good indication that there's no trace of an infection. Correspondingly, the urobilinogen test was present at the normal range as all resulted in 0.2. If urobilinogen is not present, it indicates that the liver is not functioning properly. At the same time, if it is too high, it could indicate that a disease is forming within the liver. Additionally, the pH of normal urine and abnormal urine-1 were in the normal range of 4.5-8.0. However, the abnormal urine-2 appeared to be too basic, contributing to UTI in the urine(Marieb et al., 2016).

In like manner, for the blood in the urine, only abnormal urine-2 was positive with a "large" result. Having a positive result for blood could mean inflammation to the bladder or an infection. For specific gravity, all range at an average peak of 1.001-1.030. This test indicates if the kidneys are working correctly at diluting the urine. Furthermore, the samples tested negative for ketone, except abnormal urine-1, which resulted in a small 15 and abnormal urine-2 resulted in trace 5. This means that there appear to be ketones in the urine. Likewise, all tests came negative for bilirubin; if bilirubin had come positive, it would suggest a possible disease in the liver. Finally, glucose showed negative for normal urine, 2000+ for abnormal urine-1, and 1000 for abnormal urine-2. The test shows the sugar levels in urine (usual in diabetic patients) (Marieb et al., 2016). In addition, the purpose of the experiment was to analyze urine using chemical strips. And the importance of doing a urinalysis test as it detects the many results an individual can have.

Reference

Marieb, Elaine Nicpon., et al. "Human Anatomy & Physiology Laboratory Manual. Cat Version 11th edition." *In SearchWorks Catalog*, 2016, <https://searchworks.stanford.edu/view/11693293>.