

urine analysis lab report essay sample

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There is a lot of importance that comes with testing urine. Many different diseases can be tested for, (i. e. diabetes) and a urinalysis can provide a lot of useful information to physicians. Simple tests can immediately be taken from simply looking at a urine sample; color, odor, transparency, etc. By looking at the color of urine, things such as hydration levels can be tested. The clearer urine is, the more water that is present. Also, with the use of a microscope, particles like casts and sugar can be detected. The presence of too many certain particles can help to indicate that an infection/disease may be present. There are countless tests that can be taken during a urinalysis that can help to show any abnormalities in the urine and rest of the body. The process of producing urine and removing toxins from the body occurs in the excretory system. The organs (kidneys, etc.) that are a part of this system are in charge of different aspects of urine production. When urine is being formed, there are three processes that must occur.

The first step that occurs is filtration. In this step, diffusion occurs under high pressure because blood is moving to the glomerulus of the nephron through the afferent blood vessel. The lumen size of the vessel becomes immediately smaller, so when substances in the blood are being filtered out, they are pushed through by a high pressure. The kidney at this point is simply trying to maintain a homeostatic control, so not everything is filtered out. Next, the filtrate goes through reabsorption, which starts to occur in the proximal convoluted tubule of the nephron. When particles are being reabsorbed, they can be reabsorbed by a concentrated gradient, active transport pores, and facilitated diffusion pores. Once the filtrate moves to the loop of henle, as it

descends, water is highly permeable and sodium is impermeable to the membrane of the loop of henle.

Water continues to diffuse out, but around the middle of the loop, the rules of diffusion change. Sodium is now highly permeable, but water is not. This means that the loop of henle has dual permeability. A counter current also occurs at this step because the filtrate is moving one direction, while the vessel running along side of it has blood moving the other direction. When the sodium diffuses out, urea becomes magnetized to it and also diffuses out. Now the sodium and urea are held in the interstitial space. After the reabsorption step, secretion occurs. In this step, the filtrate starts to move down the collecting duct of the loop of henle. There is a gradient that occurs between the high salt concentration outside the collecting duct and the low concentration of salt inside. Salt, along with the urea, diffuses into the collecting duct and moves down to the bladder. Urine has now been formed with the combination of salt, urea, and water. It is now held in the bladder until it can be excreted. Materials:

Urine collecting cup

Fresh urine sample (subject's own)

Chem – 9 strip

Urinometer

Clean microscope slide

Slide cover strips

Microscope

Test tube

Centrifuge

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Centrifuge tube

Spatula

Methods/Procedure:

1. Take a urine collecting cup. Use the restroom and take a sample of urine.
2. With the sample in the cup, dip a Chem – 9 strip in the urine for 30 seconds.
3. Lay the strip on a paper towel for 60 seconds. Use the Chem – 9 strip container to analyze the results on the strip. Normal Levels for Chem –

9 Test:

Leukocytes – Negative

Nitrite – Negative

pH – 5 to 7

Protein – Negative to trace

Glucose – Negative

Ketones – Negative

Urobilinogen – 0. 2-1. 0 Ehr U/dL

Bilirubin – Negative

Blood – Negative

4. Records results of Chem – 9 test.
5. Next, specific gravity has to be found using the urinometer. Fill a test tube about three-fourths of the way full and carefully insert the urinometer.
6. Read the specific gravity where the urine lines up on the urinometer. Record gravity value. Pour urine back into collecting cup after gravity is found.
7. To find the estimation of amount of urinary solids, take the last two digits of the specific gravity (ex. If gravity is 1. 020, use 20) and multiply that

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number by 2. 66.

8. Pour urine into centrifuge tube around three-fourths of the way full. Place tube in centrifuge (Make sure it is balanced!) and let it centrifuge for 5 minutes.

9. Use a spatula to smear particles at the bottom of the centrifuge tube onto a clean microscope slide. Place a slide cover strip over the urine. Look at slide underneath of the microscope.

10. Record any casts, cells, crystals, etc. found on the slide.

11. Pour leftover urine into sink (follow with water), and clean anything that was used to test the urine sample.

Analysis/Conclusion:

In this experiment, the end result was to figure out how to test a urine sample and understand further how urine is formed. After completing this lab, I have a more thorough understanding of what all is actually contained in urine. Many constituents like ketones, glucose, etc. can be found in a sample of urine. Once levels are known for the various constituents, who can be found out using a Chem - 9 strip test, they can help to identify many different diseases and infections. Also, when urine is first being formed in the kidneys, some elements of the kidney filtrate may be in excess, so they may not have been completely filtered out in the glomerulus of the nephron. If elements such as glucose are found in excess, this can be an indication of a problem, like diabetes. Other tests can then be performed to further the conclusion of a problem in the body.

From my results of the urinalysis, I can come to the conclusion that I am at normal levels for all of the constituents that were being tested with the

Chem - 9 test. In Data Table 1, for each of my results either matches what a normal result would be or there is only trace amounts. For example, in the test for leukocytes there was only a trace amount found. The same result also occurred for my protein levels in my urine. My pH level was a 5 and landed well within the range of a normal pH level, which is between 4.8 and 7.5. Then for nitrite, ketones, bilirubin, and blood, my levels came back as negative. Finally, for glucose and urobilinogen, those test results came back as normal. These results show that there is no indication of any abnormalities or infections. If my urine would be tested by a physician, I know that all my results would come back positive because of what I have seen with my own urinalysis.

While I was participating in this experiment I do not believe that I encountered any errors or problems with my results. The only errors or problems that I feel may arise in some trials of this lab are an inadequate amount of urine sample to be tested, inaccurate measurements, and misreading of the Chem - 9 test strips. I do not feel that any of these problems occurred during my testing.

Finally, I feel that a urinalysis is a very helpful tool in determining a person's state of health. Many tests can be run on a sample of urine, and with those test results, further examination can help to determine the presence of abnormal constituent levels and disease/infection. The urinalysis procedure has been used for many years by doctors, and I feel that it is still the most in depth testing that can be done to help a patient figure out if their body is healthy or not. Tests for leukocytes, glucose, blood, etc. all supply patients

with results that can help them to early detect any problems or abnormalities that may be occurring in their body.