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BIO 2312 OL57: Human Anatomy and Physiology II Lab

Tuesday, 2:30pm-5:00pm

Urinalysis Lab Report

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**Introduction:**

Urinalysis is very important when it comes to testing for diseases. You can test for many things in your urine including glucose, pH, RBC, leukocytes, proteins, and etc. levels. The results of these tests can help determine diseases and infections such as diabetes, urinary tract infections, lupus, hypertension, kidney or liver failure, and many more. The urinary system is an important component when it comes to eliminating metabolic wastes that are no longer needed in the body. Testing if your body is functioning well can be seen in different ways when it comes to urinalysis.

Urine has many characteristics that can be tested to determine certain abnormalities. Color and transparency are a great way to determine drugs bile or blood in the urine (Marieb, 2019, p 618). Different urine odors can determine many things such as diabetes, bacterial infections, or it could just be the foods you are eating. Foods can also be a component of pH changes in your urine. The normal pH of urine ranges from 4.5-8.0 and can be either acidic or alkaline depending on what is affecting its pH. Along with odor and color, specific gravity plays a role in urinalysis. When a person drinks a lot of water, their urine is diluted, this is usually seen with people who have chronic renal failure. When someone is dehydrated and not consuming enough water, their urine has a high specific gravity, this is seen in people with diabetes mellitus. In the urinalysis lab, you were able to tell glucose levels which lead to diabetes being a possibility or if your liver or kidneys were not functioning properly.

This lab was conducted to determine abnormalities in the different urine samples and what each abnormality signifies.

**Hypothesis:** Urine sample 1 and 2 will be diabetic patients.

**Materials & Methods:**

In the urinalysis activity, 3 urine samples were used. One sample was a normal urine sample while the other two were abnormal urine samples. In order to determine any physical characteristic abnormalities in the urine, the color, odor, and transparency were first tested, and results were recorded in the chart. The multistix was used to determine the pH levels in the urine as well as the remaining tests. To determine the glucose levels in the urine, a dipstick was used, and the results were then recorded. The ketone was tested using a dipstick in order to determine if there were any traces in the urine. The blood. bilirubin, leukocytes, and urobilinogen were tested using dipsticks for each and depending on the color, it would tell us whether it was an abnormality result or normal. All results were recorded to be discussed.

**Results and Data:**

| Activity 1: Urinalysis Results | | | | |
|---|---|---|---|---|
| **Observation or test** | **Normal values** | **Standard urine specimen** | **Abnormal Urine Sample #1** | **Abnormal Urine Sample #2** |
| Color | Clear yellow | Clear yellow | Pale yellow | Pale amber |
| Transparency | Clear | Clear | Cloudy/Turbid | Cloudy |
| Odor | Varies with composition | Aromatic | Aromatic | Aromatic |
| Leukocytes | Absent | Negative | Negative | Negative |
| Nitrites | Absent | Negative | Negative | Negative |
| Urobilinogen | Present | Normal | Normal | Normal |
| Protein | Negative | Negative | 2000 or more mg/dL | 2000 or more mg/dL |
| pH | 4.5-8.0 | 6.5 | 6.0 | 8.5 |
| RBCs/hemoglobin | Negative | Negative | Hemolyzed trace | Large +++ |
| Specific gravity | 1.003-1.030 | 1.025 | 1.030 | 1.005 |
| Ketone bodies | Negative | Negative | Small 15 | Small 15 |
| Bilirubin | Negative | Negative | Negative | Negative |
| Glucose | Negative | Negative | 2000 or more mg/dL | 1000 mg/dL |

**Discussion/ Conclusion:**

The lab activity was used to determine health issues in two different patients and differentiate the characteristics of normal and abnormal urinary components. Two abnormal urine samples were used as well as a normal urine sample to help determine the standards of how the urine should be. According to the high glucose levels in urine sample 1 and 2 the patients seem to be diabetic. The negative results of bilirubin in both patients showed that they do not have jaundice and that the bilirubin is not affecting the liver. Any amount of ketone detected in your urine is a sign of uncontrolled diabetes mellitus. Patient 1 and 2 both had ketones in urine which is due to the high glucose levels. Due to the specific gravity in patient 2 being 1.005 means the patient is not getting enough water which is causing the kidneys to overlock and the urine to be thick. The specific gravity in patient 1 is high giving another sign of diabetes mellitus and can cause dehydration. There was a trace of hemolyzed blood in patient 1 which shows there could be damage to the kidneys. Patient 2 had large levels of blood in the urine which can indicate kidney failure due to major damage to the kidneys. The pH levels in patient 1 were slightly acidic but within normal range, patient 2 had a more alkali pH level which could show signs of renal failure. High levels of protein were found in the urine which shows the kidneys are not properly functioning. The protein in the urine shows that the patients are very ill and are having kidney issues. According to the American Kidney Fund, protein leaks through your kidney filters and into your urine when they are not functioning properly (Kidney Fund, 2021). Due to the normal results of urobilinogen in both patients, no signs of jaundice are present. Negative results in nitrites and leukocytes show that both patients don’t have a urinary tract infection. My hypothesis of both patients having diabetes was correct based on the results. A similar disease that can be seen in patients with similar results from their urine samples can be

lupus. According to the Johns Hopkin Lupus Center, urinalysis is used in lupus treatment to detect high protein levels and find urinary tract infections. Many people with lupus have abnormal urinalysis (Hopkins Lupus, 2019).

**References:**

Marieb, E. N., Smith, L. A., & Zao, P. Z. (2019). Digestive System Processes: Chemical and Physical. In *Human Anatomy & Physiology Laboratory Manual* (12th ed.). essay, Pearson.

Kidney Fund. (2021). *Protein in urine (proteinuria) causes, symptoms, & treatments*. American Kidney Fund (AKF). https://www.kidneyfund.org/kidney-disease/kidney-problems/protein-in-urine.html.

*Urinalysis test for lupus : Physical, chemical and microscopic analysis*. Johns Hopkins Lupus Center. (2019, March 27). https://www.hopkinslupus.org/lupus-tests/screening-laboratory-tests/urinalysis/.