

# Urinalysis

A urinalysis is a very useful diagnostic test. It consists of three parts:

## 1. Specific Gravity

This is the urine concentration and is measured accurately using an instrument called a refractometer. A high concentration indicates dehydration, while a low concentration can point to kidney disease or diabetes, among other illnesses.

## 2. Dip stick

A dipstick is easily run in house using a small paper strip that contains reagents which change color indicating certain urine qualities.

**pH-** An alkaline pH can lead to crystal formation.

**Protein-** A small amount of protein is normal but a large amount can indicate kidney disease.

**Glucose-** Normally negative. A positive result is often caused by diabetes.

**Bilirubin-** Normally negative. A positive result indicates liver disease.

**Ketones-** Normally negative. A positive result indicates diabetic ketoacidosis.

**Red Blood Cells-** Blood can be due to the method of collection (cystocentesis), or can indicate other illnesses such as FUS (bladder inflammation), a bladder infection, bladder stones, or kidney disease.

## 3. Sedimentation

To perform a sedimentation, the urine is spun down in a centrifuge and the sediment is then placed on a slide and examined with a microscope.

**Red Blood Cells-** Red blood cells can also be seen on the sediment if they are not hemolyzed.

**White blood cells-** Most commonly indicate a bladder infection or a kidney infection.

**Bacteria-** If an aseptic technique was used to collect urine, this indicates either a bladder or kidney infection.

**Casts-** Cylindrical objects that can point to a variety of diseases depending on the type.

## **Urine culture and sensitivity:**

This test is used to determine what type of bacteria are present in the bladder and what antibiotic can be used to treat the infection. It can be performed in addition to a urinalysis. Urine is placed on a petri dish and then placed in an incubator where bacteria are grown. This may take a few days. When a colony of bacteria appears, small discs containing various antibiotics are added to the petri dish. A large ring around a disc containing a certain antibiotic, indicates that the antibiotic is effectively killing that particular type of bacteria. A culture and sensitivity helps with the selection of antibiotic type and should be performed if a kidney or urinary tract infection is suspected.

## **How is urine collected?**

Urine can be collected via two methods:

- 1. Cystocentesis-** This is a needle tap of the bladder and the most sterile way to obtain a urinalysis. It sounds painful but cats don't seem to mind it anymore than a subcutaneous injection.
- 2. Free catch-** This is basically waiting for your cat to urinate on its own. It is not as sterile of a sample as doing a cystocentesis. Bacteria present on such a sample may not be significant, and technically it shouldn't be used for a urine culture and sensitivity.