

# Ethyl Glucuronide (EtG) Alcohol Testing

**What is Ethyl Glucuronide?** Ethyl Glucuronide (EtG) is a direct metabolite of beverage alcohol (ethanol). Its presence in urine may be used to detect recent alcohol consumption, even after ethanol is no longer measurable. The presence of EtG in urine is a definitive indicator that alcohol was ingested.

## Key Benefits of Using EtG test Include:

- Detects recent usage more accurately and for a longer period of time than standard testing
- Ideal for zero tolerance and abstinence situations
- Strong indicator of alcohol ingestion within the previous 3 to 4 days
- EtG is only evident when alcohol is consumed and is not produced as a result of fermentation
- Allows monitoring in alcohol treatment programs
- Acts as an early warning system to detect trends towards relapse
- Tests are performed by LC/MS/MS on state of the art equipment for accuracy and reliability
- Thirty-six hour turnaround time from receipt of specimen
- EtG may be run on urine specimens in conjunction with other drug testing panels

**How long can EtG be detected in urine?** Traditional laboratory methods detect the actual alcohol in the body, which reflects current use within the past few hours (depending on how much is consumed). The presence of EtG in urine indicates that ethanol was ingested within the previous 3 to 4 days, or approximately 80 hours after ethanol is eliminated from the body. Therefore, EtG is a more accurate indicator of the recent injection of alcohol than measuring for the presence of ethanol itself.

**How accurate and reliable is the EtG test?** EtG is a direct metabolite of alcohol (ethanol), and its detection in urine is highly specific, similar to testing for other drugs. Add to this, our lab utilizes the most sophisticated, sensitive, and specific equipment and technology available, LC/MS/MS, to screen, confirm, and quantitate EtG. This methodology provides highly accurate results. As in the case with any laboratory test, it is also very important to obtain clinical correlation.

**Can residual EtG be detected in the urine of long-term alcoholics who abstain?** Studies indicate that alcoholics in abstinence have no detectable levels of EtG in their urine after approximately 80 hours of detoxification.

**What about urine alcohol produced by fermentation?** EtG is only detected in urine when alcohol is consumed. This is important since it is possible to have alcohol in urine without drinking. Alcohol in urine without drinking is due to the production of ethanol *in vitro*. Ethanol *in vitro* is spontaneously produced in the bladder or the specimen container itself, due to fermentation of urine samples containing sugars (diabetes) and yeast or bacteria. Since the ethanol produced is not metabolized by the liver, EtG will not be produced and will therefore not be detected in a urine containing alcohol as a result of fermentation.

**How stable is EtG in urine?** Studies show that EtG is stable in urine for more than 4 days at room temperature. Recent experiments indicate that heating urine to 100 degrees C actually increased the stability of EtG. Therefore, heat does not cause the breakdown of EtG, it actually increases stability. In addition, no artificial formation of EtG was found to occur following the prolonged storage of urine at room temperature fortified with 1% ethanol.

**In general, what methods are used to detect EtG?** Methods to detect EtG include immunoassay (EIA or ELISA), gas chromatography/mass spectrometry (GC/MS), liquid chromatography/mass spectrometry (LC/MS), and liquid chromatography/mass spectrometry/mass spectrometry (LC/MS/MS). Immunoassay methods are of limited specificity and sensitivity with a limit of detection of approximately 1000 ng/mL. GC/MS and LC/MS methods are much more specific than immunoassay, and offer detection limits of approximately 500 ng/mL. LC/MS/MS methods utilize the most technologically advanced instrumentation currently available in forensic and clinical toxicology and provide the highest sensitivity. Our lab utilizes an LC/MS/MS instrument for the confirmation of EtG, which has a limit of detection of 250 ng/mL.

**Will the use of incidental alcohol, such as mouthwash and Over-the-Counter (OTC) cough syrups trigger a positive result?** Tests show that "incidental exposure" to the chronic use of food product (vanilla extract), hygiene products, mouthwash, or OTC medications (cough syrups) can produce EtG concentrations in excess of 100 ng/mL. However, if measurable ethanol is detected (greater than .04 gm%) in the urine, and EtG is also detected in excess of 250 ng/mL, then this is very strong evidence that beverage alcohol was consumed.

Most alcohol abstinence programs require an agreement to avoid all products containing alcohol, including: mouthwash, Nyquil, OTC medications, etc. Consumption of these products could produce a positive test for alcohol and/or EtG and would thus violate this agreement.

Clinical, and not chain of custody panels: Screening is performed by enzyme immunoassay (EIA) and confirmations, if desired, will be performed by Quest Diagnostics' choice methodology (call local lab for more information). The DAP title denotes the number of drugs in the panel (ten drugs in a DAP 10). THC may be screened at three different levels (20, 50, and 100 ng/mL). A urine or blood ethanol may be included upon request. Please see drug testing section for further detail on drug abuse tests. Ethanol is the most often abused chemical substance. Other CNS depressant drugs have an additive effect when taken in combination with ethanol. Ethyl alcohol is present in many medicinal liquids and mouthwashes.