

ASCLS Mission:

The mission of ASCLS is to make a positive impact in health care through leadership that will assure excellence in the practice of laboratory medicine.



REFERENCES

- Chun KY. Biotin Interference in Diagnostic Tests. *Clinical Chemistry* 2017; 63: 619-20.
- da Silva-Colombeli AS, Falkenberg M. Analytical interferences of drugs in the chemical examination of urinary protein. *Clinical Biochemistry* 2007; 40: 1074-6.
- Hart MH, de Vrieze H, Wouters D et al. Differential effect of drug interference in immunogenicity assays. *Journal of Immunological Methods* 2011; 372: 196-203.
- Lippi G, Daves M, Mattiuzzi C. Interference of medical contrast media on laboratory testing. *Biochimica Medica* 2014; 24: 80-8.
- Nagase S, Kohguchi K, Tohyama K et al. Interference by Pralidoxime (PAM) salts in clinical laboratory tests. *Clinica Chimica Acta* 2013; 416: 72-9.
- Tsakiris DA. Direct Oral Anticoagulants-Interference With Laboratory Tests and Mechanism of Action. *Semin Hematol* 2014; 51: 98-101.
- Vasudevan S, Hirsch IB. Interference of Intravenous Vitamin C With Blood Glucose Testing. *Diabetes Care* 2014; 37: E93-E4.
- Williams GR, Cervinski MA, Nerenz RD. Assessment of biotin interference with qualitative point-of-care hCG test devices. *Clinical Biochemistry* 2018; 53: 168-70.
- Amanatullah DF, Lopez MJ, Gosselin RC, Gupta MC. Case Report: Artificial Elevation of Prothrombin Time by Telavancin. *Clin Orthop Rel Res* 2013; 471: 332-5.
- Martin EL, Taylor HL. False-Positive Viral Serologies Due to Intravenous Immunoglobulin Administration in a Case of Suspected Transfusion-Transmitted Disease. *American Journal of Clinical Pathology* 2012; 138: A256-A.
- Syrjänen K. (2017). False Positive and False Negative Results in Diagnosis of Helicobacter Pylori Infection Can be avoided by A Panel of Serum Biomarkers (GastroPanel®). *M J Gast.* 1(1): 007.
- Terato K, Do C, Chang J, Waritani T. Preventing further misuse of the ELISA technique and misinterpretation of serological antibody assay data. *Vaccine* 2016; 34: 4643-4.
- Yao H, Rayburn ER, Shi Q, Gao L, Hu W, Li H. FDA-approved drugs that interfere with laboratory tests: A systematic search of US drug labels. *Crit Rev Clin Lab Sci.* 2017;54(1):1-17.

**Your Safety and Service Experience
Are Important To Us!**

Laboratory Patient Safety Tips:

Drug-related Laboratory Test Interference For Providers



What is Drug-related laboratory test interference?

- Both prescription and over-the-counter (OTC) drugs can cause laboratory test results to be incorrect (false increase or decrease).
Note: The amount of result increase or decrease may be dose dependent.
- Incorrect results can lead to diagnosis and treatment errors that could harm the patient. Prior to laboratory testing, it is important to identify if your patients are taking any OTC supplements or prescription drugs.
- This guide identifies some of the more common laboratory test results which may be impacted by drug interferences.

Test Abbreviations

ACE: angiotensin-converting enzyme

AST: aspartate aminotransferase

ALT: alanine aminotransferase

CEA: carcinoembryonic antigen

DHEA-S: dehydroepiandrosterone sulfate

Free T3: free triiodothyronine

Free T4: free thyroxine

FSH: follicle-stimulating hormone

HBcAb: hepatitis B core antibody

HBsAb: hepatitis B surface antibody

HBsAg: hepatitis B surface antigen

HCV Ab: hepatitis C antibody

HCG: human chorionic gonadotropin

IgE: immunoglobulin E

IgM: immunoglobulin M

INR: international normalized ratio

LH: luteinizing Hormone

PAM: pralidoxime

PSA: prostate-specific antigen

PT : prothrombin time

PTH: parathyroid hormone

SAT: stool antigen test

TIBC: total iron-binding capacity

TSH: thyroid stimulating hormone

UBT: C-urea breath test

For more information about these and other laboratory tests visit the Lab Tests Online website:

<https://labtestsonline.org/>

For herbal supplement information visit the National Institutes of Health (NIH)

'Herbs at a Glance' website:

<https://nccih.nih.gov/health/herbsataglance.htm>

OVER-THE-COUNTER (OTC) DRUGS

OTC Drug	Laboratory Test Potentially Affected
Biotin (Vitamin B7) <i>Sources of biotin naturally occur in foods and can be found in multi-vitamin, B-complex, and biotin only supplements.</i>	<u>False Mild Increase:</u> Free T4, FreeT3, Testosterone, Estradiol, Cortisol, IgE <u>False Moderate Decrease:</u> TSH, FSH, LH, Insulin, Autoantibodies, Vitamin B12, Folate, Vitamin D, PSA, CEA, HCG, PTH, Thyroglobulin, Ferritin, DHEA-S, Hepatitis A IgM, HBsAg, HBsAb, HBcAb, HCV Ab
Herbal Supplements	
Chan Su Lu-Shen-Wan Dan Shen "Cleansing" Herbal Supplements	<u>False Mild Increase:</u> Digoxin
Kava-Kava	<u>False Mild Increase:</u> AST, ALT, Bilirubin
St. John's Wort	<u>False Mild Decrease:</u> Theophylline, Digoxin
Caffeine	<u>False Mild Increase:</u> Metanephrines
Others	
Nicotine	<u>False Mild Increase:</u> Fatty Acids, Aldosterone, Cortisol, Tumor Markers, ACE

PRESCRIPTION DRUGS

Prescription Drug	Laboratory Test Potentially Affected
Amiodarone Cotrimoxazole Daptomycin Erythromycin Omeprazole NSAIDs, Propranolol Telavancin	<u>False Mild Increase:</u> PT and INR
High-dose glucocorticoids Dopamine/ Dobutamine Octreotide	<u>False Mild Decrease:</u> TSH
Imipenem/ Cilastatin (Primaxin)	<u>False Positive:</u> Galactomannan
IV administered Vitamin C	<u>False Mild Increase:</u> Glucometer Results
Ciprofloxacin Chloroquine Quinine	<u>False Mild Increase:</u> Urine Protein
PAM salts for organophosphorus poisoning	<u>False Severe Increase:</u> Glucose
Cephalosporin	<u>False Positive:</u> Urine Glucose Urine Ketone Direct Coombs Test
Psychotropic Drugs	<u>False Positive:</u> Pregnancy Tests Drug Screening
Contrast Media <i>Prior to having laboratory specimens collected it is recommended to wait at least 4 hours after contrast media is administered.</i>	ACE Protein levels (blood) Calcium Creatinine TIBC Zinc Magnesium Selenium
Proton Pump Inhibitors (PPI) omeprazole, lansoprazole, dexlansoprazole, rabeprazole, pantoprazole, esomeprazole, esomeprazole	<u>False Negative:</u> UBT SAT <u>False Positive:</u> UBT (long-term use)

