

Interference in Laboratory Tests

Many laboratory tests are subject to interference by endogenous or exogenous factors which may alter the true concentration of a substance within the body, or cause an analytical interference giving a potentially erroneous or misleading result.

All samples are routinely checked for Haemolysis, Lipaemia and Icterus which can interfere with laboratory tests to varying extents. Significant levels of any of these may affect the quality of some test results which will be highlighted and/or removed from the individual report.

Test results should be interpreted in conjunction with clinical findings and if interference is suspected please contact the laboratory (dutybiochemist@beaumont.ie) where further information on each test method is available.

Drug Interference

Some important drug interferences and their nature are listed below. This is NOT an exhaustive list. Please contact the laboratory for further information. Please note that for diagnostic purposes, results should always be assessed in conjunction with the patient's medical history, clinical examination and other findings.

Biotin Interference

Immunoassays are commonly used in the laboratory for measurement of hormones, Troponin and Tumour Markers. These assays are based on a streptavidin-biotin reaction.

Biotin (Vitamin B7) is a water soluble vitamin found in many dietary products. Normal dietary intake or low dose biotin supplementation appear not to have a significant effect on many immunoassays. However, high dose biotin supplementations used for hair, skin and nail growth (5-10mg) and prescription doses (up to 300mg) for diseases such as Multiple Sclerosis and some metabolic disorders, have the potential to cause analytical interference resulting in falsely elevated or reduced results.

Extreme care should be taken in the interpretation of Troponin T results, where high concentrations of biotin can cause inappropriately low results. Clinicians should enquire re use of biotin supplementations, prior to sampling for Troponin T.

For other tests, manufacturer recommendation (Roche Diagnostics) is that samples should not be taken from patients receiving therapy with high dose biotin (>5mg/day) until at least 8hours following the last dose of biotin administered, however published literature recommend the discontinuation of biotin supplementation for 48hours before phlebotomy.

Biotin interference should be considered when results are discordant or do not correlate with clinical findings. Please contact the laboratory (dutybiochemist@beaumont.ie) as it may be possible to send samples for testing using alternative methods (where available).

Clinical Directorate of Laboratory Medicine, Beaumont Hospital

Doc No: CP-LI-0206 **Revision** 1 **Active Date** 01/10/2020

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Test Name	Interfering Substance	Details	Source
AST	Sulfasalazine/Sulfapyridine Hydroxocobalamin	Interference ↓ results	IFU 2019-02 V7 CCFSN_04_15
ALT	Sulfasalazine/Sulfapyridine Calcium Dobesilate Hydroxocobalamin	Interference ↓ results	IFU 2018-09 V7 CCFSN_04_15
Immunoassays: ft4 ft3 Cortisol Estradiol Troponin TSH bHCG FSH LH PSA CA-125 BNP PTH Aldosterone Renin IGF1	Biotin (>5mg/day)	Interference ↑ results Interference ↑ results Interference ↑ results Interference ↑ results Interference ↓ results Interference ↓ results	Please see individual IFUs for further information. Samples should not be drawn until ≥8hrs post biotin administration IDS FSN: N-2018-004
Creatinine (enzymatic)	N-Acetyl Cysteine (>333mg/L) Rifampicin Levodopa Dexium Metamizole Dicynone	Interference ↓ results	IFU 2019-03 V12 CCFSN-03-15 HPRA SN2015(09)
Lipids: Cholesterol LDL Cholesterol Triglyceride HDL Cholesterol	N-Acetyl Cysteine Metamizole	Interference ↓ results	See IFU for each assay on QPulse/Roche Dialog CCFSN-03-15 HPRA SN2015(09)
Uric Acid	N-Acetyl Cysteine Calcium Dobesilat Dicynone Metamizole	Interference ↓ results	IFU 2019-12 V11 CCFSN-03-15 HPRA SN2015(09)
Urine Toxicology Screen	Various	A full list of interfering substances is available upon request	See IFU for each assay on QPulse/Roche Dialog
Cortisol	Prednisolone/derivatives Metyrapone 21-deoxycortisol	May cause false elevations	IFU 2020-07 V3

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Test Name	Interfering Substance	Details	Source
Testosterone	Nandrolone	Risk of cross reactivity, advise against use of this assay for Testosterone monitoring in patients on Nandrolone	IFU 2020-03 V2
Estradiol	Fulvestrant	Risk of cross reactivity, advise against use of this assay for Estradiol monitoring in patients on Fulvestrant	IFU 2020-05 V5
Digoxin	Hydrocortisone Uzara Nabumetone Pentoxifylline Canrenone Triamterin Spironolactone DLIS DigiBind/DigiFab	May cause false elevations	IFU 2020-03 V3
ACTH	ACTH 1-24	Interference ↓ results	IFU 2020-05 V2
FT4	Furosemide Levothyroxine	May cause false elevations	IFU 2020-07 V3
Folate	Methotrexate Leucovorin	May cause false elevations	IFU 2018-10 V3
Progesterone	Phenylbutazone	Interference ↓ results	IFU 2020-04 V3
Tacrolimus/FK506	Erythromycin Fluconazole Clotrimazole Clarithromycin Danazol Inhibitors of CYP450 Rifampicin Inducers of CYP450	May cause false elevations Interference ↓ results	IFU and laboratory SOP
Plasma Free Metanephrines	Midodrine L-methyl dopa L-DOPA metabolites Metaraminol Nadolol and sotalol Metformin	False + Met and 3-MT False – Normet Can cause Ion suppression	See CP-EX-0408 for assay details