

Date: July 2, 2019
To: North Zone, Physicians, Nurse Managers, Laboratory Managers and Staff
From: Alberta Public Laboratories (APL)
Re: Biotin Interference with Immunoassay Testing

PLEASE POST OR DISTRIBUTE AS WIDELY AS APPROPRIATE

Key Message:

- High dose Biotin supplementation can interfere with many of the laboratory tests. This can result in falsely low, falsely high, or invalid results.

Why this is important:

- Biotin is a water soluble vitamin that may be listed under the names of biotin, biotine, vitamin H, vitamin B7 or coenzyme R and has a recommended daily allowance of 30-70 micrograms (µg) per day; most multivitamins contain about 30 µg of biotin.
- Recently, biotin has been taken in high doses (up to 30 mg per day) as an oral supplement to improve hair, skin and nail health. Even higher doses of biotin are also used to provide supportive treatment for individuals with mitochondrial metabolic disorders and multiple sclerosis. Biotin doses of greater than 1 mg per day may result in sufficient levels of biotin in the blood to cause interference with certain immunoassays.
- Two thyroid function tests offered by the Bonnyville Health Centre Laboratory are based on immunoassays that utilize biotin and may be impacted by the presence of large amounts of biotin in the blood.
- The manufacturer has determined that the Free T3 and Free T4 Immunoassays are susceptible to a positive bias when patient samples contain greater than 10 ng/mL of biotin. A difference of +10% is considered clinically significant. Refer to table below for estimated bias based on 100 ng/mL of biotin in patient samples provided as examples.

<i>Serum level of 100 ng/mL Biotin</i>				
	<i>Analyte Level</i>	<i>Expected concentration</i>	<i>Observed concentration</i>	<i>% Interference</i>
<i>FT4 pmol/L</i>	<i>Low</i>	<i>12.87</i>	<i>26.74</i>	<i>+100</i>
	<i>High</i>	<i>36.04</i>	<i>59.20</i>	<i>+64</i>
<i>FT3 pmol/L</i>	<i>Low</i>	<i>4.02</i>	<i>8.88</i>	<i>+121</i>
	<i>High</i>	<i>4.60</i>	<i>9.47</i>	<i>+106</i>

Action Required:

- We recommend that patients abstain from taking biotin for 48 hours before specimen collection for thyroid testing.

Inquiries and feedback may be directed to:

- For more information about biotin and its effect on a specific test, please contact the Bonnyville laboratory at 780-826-3311 ext. 3289.

This bulletin has been reviewed and approved by:

- Dr. Carolyn O'Hara, Interim Chief Medical Laboratory Officer, Alberta Public Laboratories (APL)