

# Prolactin Macroadenoma

## *FOR DETERMINING THE PROLACTIN CONCENTRATION IN PATIENTS WITH PITUITARY MACROADENOMAS*

### Test Highlights

- This test is useful for quantifying prolactin in samples where the high-dose hook is suspected. This may occur when a pituitary macroadenoma has been identified radiologically and a normal or mildly elevated prolactin concentration is measured with symptoms of a prolactinoma.
- This test can identify patients with prolactin-secreting pituitary macroadenomas by predilution of the sample to avoid a possible high-dose hook effect that can be seen with prolactin immunoassays.

### Clinical Background

Prolactin-secreting tumors are usually associated with serum prolactin concentrations exceeding 200 ng/mL. Prolactin-secreting pituitary macroadenomas can sometimes produce exceedingly high serum concentrations of prolactin. Prolactin concentrations greater than 30,000 ng/mL can paradoxically result in falsely low results when measured by a 2-site automated immunoassay. This is referred to as the high-dose hook effect. The measured serum prolactin concentration may occasionally be falsely decreased into the reference interval with these tumors, potentially resulting in inappropriate diagnosis and management. Dilution of the sample prior to analysis eliminates the high-dose hook effect and provides a more accurate prolactin measurement.

### Limitations

- A pituitary macroadenoma should be identified by imaging studies prior to ordering this test. A macroadenoma may be nonfunctional and not secrete prolactin.
- This test should not be ordered for the initial routine evaluation of prolactin-secreting tumors unless a pituitary macroadenoma has been identified by an imaging study.

### Methodology

Prolactin is measured using an automated 2-site chemiluminescent immunoassay on an ADVIA Centaur analyzer. The first antibody is a monoclonal mouse antiprolactin antibody covalently coupled to paramagnetic particles. The second signal antibody is a polyclonal goat antibody labeled with acridinium ester. For this procedure, undiluted (neat), 10-fold and higher dilutions, as appropriate, of the serum sample are made and assayed for prolactin.

### Related Tests

Prolactin (0070115) should be ordered for the initial routine evaluation of prolactin-secreting tumors.

### References

1. St-Jean E, Blain F, Comtois R. High prolactin levels may be missed by immunoradiometric assay in patients with macroprolactinomas. *Clin Endocrinol* 1996;44:305-9.
2. Petakov MS, et al. Pituitary adenomas secreting large amounts of prolactin may give false low values in immunoradiometric assays. The hook effect. *J Endocrinol Invest* 1998;21:184-8.
3. Frieze TW, Mong DP, Koops MK. "Hook effect" in prolactinomas: case report and review of literature. *Endocr Pract* 2002;8:296-303.
4. Bayer HealthCare Customer Bulletin. Change in the prolactin assay hook claim: ADVIA Centaur and ACS:180 Systems. April 2006.

### Test Information

0020724

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For specific collection, transport, and testing information, refer to the ARUP Web site at [www.aruplab.com](http://www.aruplab.com).