

Product Information

Charcoal, dextran coated

Product Number **C6241**
Store at Room Temperature

Product Description

This product is made from acid washed charcoal powder and dextran, molecular weight 64-76 kDa, combined in a 10:1 (w/w) ratio.¹

The use of dextran-coated charcoal makes the immunoassay of insulin in biological fluids simpler and more rapid. In theory, the charcoal coated with dextran will adsorb the free hormone and leave hormones that are bound to a carrier (or antibody).¹ Dextran coated charcoal has been used to reduce estrogen levels in fetal bovine serum (FBS).² Dextran coated charcoal is used to strip hormones from serum instead of charcoal alone, because there is less loss of protein using dextran coated charcoal.

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Storage/Stability

Dextran coated charcoal suspended in normal saline, pH 7.4, and stored at 4 °C for up to a month maintains the ability to function in the assay for insulin.¹

Procedure

The following protocol is suggested for the removal of most of the hormones from serum. This method has been used for removal of greater than 60% each of creatinine and uric acid from serum.

1. Add 20 g of Product No. C6241 to one liter of serum and mix gently overnight on a shaker table or with an overhead mixer at 0-5 °C. Do not use a stir bar since this may break the charcoal to finer particles which may be difficult to remove.
2. Remove the charcoal from the suspension by either centrifugation at about 2000 x g for 15 minutes or, if a small sample, by filtration. Carefully remove the top layer by aspiration.

An alternate method of preparation of charcoal stripped serum using different proportions of dextran, charcoal and serum has been published.²

Small volume preparation of dextran coated charcoal-stripped serum:

1. Incubate overnight at 4 °C Norit A charcoal, and dextran T-70 in 0.25 M sucrose, 1.5 mM MgCl₂, 10 mM HEPES, pH 7.4, at final concentrations of 0.25% and 0.0025%, respectively. (100:1 w/w ratio)
2. Take a volume of the dextran-coated charcoal (DCC) equivalent to that of the serum which is to be stripped. Centrifuge it (500 x g for 10 minutes) to pellet the charcoal.
3. Decant the supernatant and replace it with the same volume of FBS (fetal calf serum). This is the equivalent of 253 mg of DCC per 100 ml of serum. Each new batch of FBS may have different growth characteristics from the last one and must be checked against some of the existing stock.
4. Vortex the container to thoroughly mix the charcoal with the serum and incubate either for 12 hours at 4 °C (DCC-stripped serum) or for 2 times for 45 minutes at 56 °C (heat-inactivated, DCC-stripped serum).

This procedure will reduce the level of estrogen in the neat FBS to below 10⁻¹¹ M, that is to below 10⁻¹² M in the medium containing 10% FBS, which is sufficiently low to permit most studies on estrogen-induced responses. It should not be assumed that this will entirely eliminate estrogen or any other steroid from the serum.²

References

1. Herbert, V., et al., Coated charcoal immunoassay of insulin. J. Clin. Endocr., **25(10)**, 1375-1384 (1965).
2. Steroid Hormones: A Practical Approach, Green, B., and Leake, R. E., IRL Press (Oxford, UK: 1987), pp. 213-214.

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