

Technical Brief

Recombinant Human Thyroid Stimulating Hormone

Recombinant Human Thyroid Stimulating Hormone (hTSH) from Scripps Laboratories is now available for research use and diagnostic assay development. The ongoing global shortage in the supply of human pituitary glands has severely impacted the supply of native TSH to the diagnostic industry. In response, Scripps Laboratories developed Recombinant hTSH from CHO and HEK293 cells as dependable and cost-effective alternatives to native hTSH. The data presented here demonstrate their suitability for assay development and large-scale assay manufacturing purposes.

SDS-PAGE

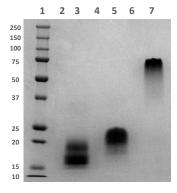
Figure 1 presents SDS-PAGE images of purified Recombinant hTSH from CHO cells (left image) and HEK293 cells (right image). Banding for both recombinants under a variety of conditions is consistent with the expected molecular weights of whole molecule hTSH and the alpha- and beta-subunits. In addition, both purified proteins show no visible contaminants under any of the sample conditions.

SDS-PAGE GLYCOPROTEIN STAIN

Native hTSH is a glycoprotein produced and secreted by the anterior lobe of the pituitary gland. Both recombinant forms of hTSH from Scripps Laboratories are produced in mammalian cell lines (CHO and HEK293) and both purified products are glycoproteins. Figure 2 is an SDS-PAGE of Recombinant hTSH, stained for carbohydrate moieties. Separation of the alpha- and beta-subunits of CHO and HEK293 recombinant hTSH is visible and both subunits are confirmed to be glycoproteins.

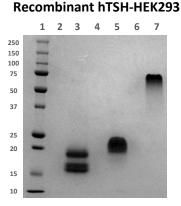
SDS-PAGE

Recombinant hTSH-CHO



Lanes

- MW Markers
- Blank
- Reduced/Heated 70 mIU Blank
- Non-Reduced/Heated 70 mIU
- 6 Blank
- Non-Reduced/Not Heated 70 mIU



Lanes

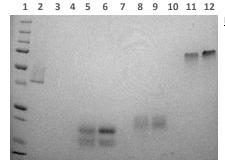
- 1 MW Markers
- Reduced/Heated 70 mIU Blank
- Non-Reduced/Heated 70 mIU
- Blank 6
- Non-Reduced/Not Heated 70 mIU

Figure 1. SDS-PAGE of Recombinant hTSH from CHO cells (left) and HEK293 cells (right). Samples for both recombinant proteins were run under reduced/heated (lane 3), nonreduced/heated (lane 5), and non-reduced/not heated (lane 7) conditions.

SDS-PAGE

- Glycoprotein Stain -

Recombinant hTSH, CHO & HEK293



Lanes

- MW Markers **Positive Control**
- **Negative Control**
- Blank
- CHO, Reduced/Heated 70 mIU
- HEK293, Reduced/Heated 70 mIU
- Blank
- CHO, Non-Reduced/Heated 70 mIU
- HEK293, Non-Reduced/Heated 70 mIU
- Blank
- CHO, Non-Reduced/Not Heated 70 mIU
- HEK293, Non-Reduced/Not Heated 70 mIU

Figure 2. SDS-PAGE of Recombinant hTSH from CHO and HEK293 cells. Glycoprotein staining of both forms of recombinant hTSH confirms they are glycosylated.



HPLC

The HPLC profiles of Recombinant hTSH-CHO and Recombinant hTSH-HEK293 are shown in Figure 3. Both profiles display prominent single peaks, with a retention time of 20.476 min for recombinant hTSH-CHO and 20.066 min for recombinant hLH-HEK293. The profiles confirm what is corroborated by SDS-PAGE: Both recombinant proteins are highly purified with no discernable contaminants.

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The data presented here for Recombinant hTSH-CHO and Recombinant hTSH-HEK293 indicate they are excellent replacements for native hTSH. Produced in mammalian cell culture systems, both recombinants are highly-purified, glycosylated proteins and are reactive in multiple antibody-based assay systems. Unit activity is determined on a clinical immunoassay system and reported for each lot.

Recombinant hTSH-CHO and hTSH-HEK293 are in stock and available now. Bulk quantities are available for large-scale manufacturing with excellent lot-to-lot consistency. Use the links at right to learn more.

HPLC

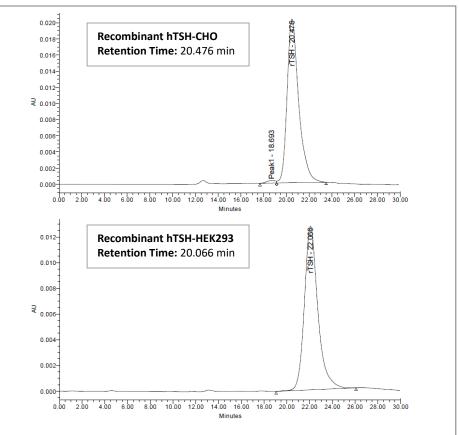


Figure 3. HPLC analysis of Recombinant hTSH-CHO (top) and Recombinant hTSH-HEK293 (bottom). Analysis was performed using a Biozen 3 μm dSEC-2, 200 Å, 300 x 7.8 mm column.

Ordering	Information
Ordering	Information
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Product Description	Cat. No.	Part No.	
Recombinant Human Thyroid	T0117	90685	View T0117-90685
Stimulating Hormone - CHO			
Recombinant Human Thyroid	T0117	90642	View T0117-90642
Stimulating Hormone - HEK293			

Expressed Without Affinity Tags