Recombinant Human NELL1
Catalog Number: 5487-NL

DESCRIPTION

Source
Chinese Hamster Ovary cell line, CHO-derived
Arg17-Asn810, with a C-terminal 6-His tag
Accession # Q92832

N-terminal Sequence Analysis
Arg17 (33%) & Phe22 (66%)

Predicted Molecular Mass
88.6 kDa & 88.1 kDa

SPECIFICATIONS

SDS-PAGE
100-130 kDa, reducing conditions

Activity
Measured by the ability of the immobilized protein to support the adhesion of C3H10T1/2 mouse embryonic fibroblast cells.
The ED_{50} for this effect is 1.4 μg/mL.

Endotoxin Level
<0.01 EU per 1 μg of the protein by the LAL method.

Purity
>95%, by SDS-PAGE with silver staining.

Formulation
Lyophilized from a 0.2 μm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution
Reconstitute at 300 μg/mL in PBS.

Shipping
The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

Stability & Storage
Use a manual defrost freezer and avoid repeated freeze-thaw cycles.

- 12 months from date of receipt, -20 to -70 °C as supplied.
- 1 month, 2 to 8 °C under sterile conditions after reconstitution.
- 3 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

NELL1 (neural EGF-like like protein 1) is an approximately 140 kDa modular glycoprotein that plays an important role in bone physiology (1). NELL1 contains an N-terminal Laminin G-like domain and three vWF-C domains interspersed with five tandem EGF-like domains (2). Mature human NELL1 shares 93% aa identity with mouse and rat NELL1. Alternative splicing of human NELL1 generates a short isoform that lacks the fourth EGF-like domain. NELL1 can be retained in the cytosol where it interacts with ARP3 (apoptosis-related protein 3) and becomes phosphorylated by PKC (3, 4). NELL1 is secreted as an approximately 400 kDa noncovalent homotrimer of heavily glycosylated subunits (5). It is expressed in bone and in select B cell lines (6, 7). NELL1 promotes the osteogenic differentiation of adipose-derived stromal/stem cells and inhibits adipogenic differentiation (5). It does not promote osteoblastic differentiation from myoblasts, but it does enhance the activity of BMP-2 in that function (9). NELL1 interacts directly with osteoblasts via Integrin α3β1 (10, 11) and promotes osteoblast differentiation and mineralization (3, 12, 13). It synergizes with BMP-2 to increase phosphate uptake through the transporters Pit1 and Pit2 in pre-osteoblasts (14). In vivo, NELL1 expression in the cranium is localized at sites of suture closure (6). Its overexpression induces multiple abnormalities in cranial development including premature suture closure (craniosyntosis) and overlapping sutures (12, 13). Experimental engraving demonstrates the ability of NELL1 to promote new bone formation and the healing of calvarial defects (13, 15).

References: