Stable Fibroblast Growth Factor 2

For research applications

- FGF2, also known as basic FGF, bFGF
- Hyperstable protein
- Thermal stability increased by 15°C compared to the wild-type
- More than 5-times prolonged half-life in human cell culture incubated at 37°C
- Engineered with fully retained biological function
- No harmful stabilizing additives

Introduction

FGF2-STAB is a stabilized growth factor that offers a novel way to grow FGF2-dependent cell cultures more efficiently, with fewer media changes. FGF2-STAB retains full biological activity even after five days at 37°C. The stable level of FGF2 in culture allows for a more homogenous, undifferentiated stem cell culture, while saving researchers valuable time and money, as repeated supplementation by FGF2 and every day medium change is not required.

FGF2 is a non-glycosylated heparin binding growth factor that is expressed in the brain, pituitary gland, kidney, retina, bone, testis, adrenal gland, liver, monocytes, epithelial cells and endothelial cells. FGF2 functions as a pleiotropic regulator of proliferation, differentiation, migration, and survival in a variety of cell types and is an essential component of media for the cultivation of human pluripotent stem cells because it helps maintain the cells in the pluripotent state. This property makes cells valuable for studying embryogenesis, for drug discovery, and for cell-based therapies.
STABLE FIBROBLAST GROWTH FACTOR 2

CAT. NO.: RENT001

<table>
<thead>
<tr>
<th>Type</th>
<th>Recombinant human protein, <em>E. coli</em>-derived</th>
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<tbody>
<tr>
<td>Purity</td>
<td>&gt;95% by SDS PAGE under reducing conditions</td>
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<tr>
<td>Endotoxin</td>
<td>Endotoxin level is &lt;0.1 ng/μg of protein (&lt;1 EU/μg)</td>
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<tr>
<td>Formulation</td>
<td>Lyophilized from a filtered solution in 20 mM potassium phosphate buffer and 750 mM sodium chloride, pH 7.5</td>
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<tr>
<td>Storage &amp; Stability</td>
<td>Upon arrival store at 4°C. Lyophilized FGF2-STAB is stable for up to 12 months when stored at 4°C</td>
</tr>
<tr>
<td>Intended use</td>
<td>For research use only</td>
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</table>

Potential industrial applications

FGF2 is a pleiotropic regulator of proliferation, differentiation, migration, and survival in a variety of cell types and is an essential component of media for the cultivation of pluripotent stem cells because it helps maintain the cells in the pluripotent state [1, 11-14]. This property makes cells valuable for studying embryogenesis, for drug discovery, and for cell-based therapies.

Research shows that FGF2 plays an important role in wound healing [2], diabetic foot ulcer treatment [3], periodontal regeneration [4], bone regrowth [5], cancer treatment [6], cardioprotection [7], neuroprotection [8], and treatment of mood disorders [9]. A key driver in these fields is the aging of the global population, since age-related diseases increase a risk of damage to tissues and slow the healing process.

FGF2 has been shown to increase skin elasticity, decrease the depth of wrinkles, increase hydration of skin, decrease the depth of pigmentation and promote hair growth by inducing anagen phase of hair follicles [10, 15, 16]. Potential applications to skin care include rejuvenation of the epidermal cells and the underlying fibroblast cells, which produce collagen, elastin and hyaluronic acid.

*Please request additional information before use in applications that require regulatory approval.*

› International patent pending
Application Data

A) Image of SDS-PAGE gel showing purity of isolated FGF2-STAB. Protein marker: 116, 66, 45, 35, 25, 18, 14 kDa.

B) FGF2-STAB maintains undifferentiated morphology of human pluripotent stem cells (ESC) equally with the wild-type. After five passages, cells were immunostained for pluripotency markers Oct4 and Nanog. Negative controls were incubated without antibodies. Scale bars, 100 µm.

C) Medium was supplemented with 10 ng/ml FGF2 and incubated at 37°C for 1 hour-5 days. Then, FGF2-starved human ESC were treated with pre-heated medium and immuno- blotted for phosphorylated ERK1/2 kinase. While the biological activity of the wild-type declined with time of heat- preincubation, the stabilized FGF2-STAB retained full biological activity even after five days at 37°C.

D) FGF2-STAB maintains undifferentiated morphology of human pluripotent stem cells. Human ESC (CCTL14) were propagated as typical tightly packed colonies in the presence of mouse embryonic fibroblast feeder layer. The culture medium was supplemented by 4 ng/ml of FGF2-STAB.
References


