

## EPIDERMAL GROWTH FACTOR (EGF)

Human, Recombinant  
Expressed in *S. Cerevisiae*

Product No. **E1264**

### Description

Epidermal Growth Factor (EGF) is a 6 kD polypeptide discovered by Cohen and Levi-Montalcini and isolated from mouse submaxillary glands.<sup>1-3</sup> EGF is mitogenic for a variety of epidermal and epithelial cells, including fibroblasts, glial cells, mammary epithelial cells, vascular and corneal endothelial cells, bovine granulosa, rabbit chondrocytes, HeLa and SV40-3T3 cells.<sup>4</sup> In tissue cultures, EGF can act to reduce or eliminate the requirement for serum and is often used in conjunction with other media additives and hormones, such as Insulin (Sigma Product No. I1882), Transferrin (Sigma Product No. T5391), and Prostaglandin E<sub>1</sub> (Sigma Product No. P7527).<sup>5</sup> Cellular metabolic effects of EGF include stimulation of ion fluxes,<sup>6</sup> glucose transport,<sup>7</sup> glycolysis,<sup>8</sup> and synthesis of DNA, RNA and proteins.<sup>4</sup>

Human EGF was originally isolated from human urine as beta-Urogastrone (Sigma Product No. U7126), an inhibitor of gastric acid secretion.<sup>9</sup> Mouse and human EGF are 70% homologous in their sequence of 53 amino acids, act upon the same EGF receptor, elicit nearly identical biological effects and are highly inter-species cross-reactive.<sup>10-13</sup>

EGF is structurally homologous to human Transforming Growth Factor-Alpha (Sigma Product Nos. T7924) which exerts its actions through EGF receptors.<sup>14</sup> EGF is also homologous to a sequence contained in a 19 kD protein of Vaccinia virus,<sup>15</sup> which appears to utilize the EGF receptor to gain entry into cells.<sup>16</sup> The EGF receptor is a 170 kD glycoprotein having EGF-activated protein tyrosine kinase activity.<sup>17</sup> Platelet-Derived Growth Factor (PDGF, Sigma Product No. P8147) transmodulates the EGF receptor by reducing both its EGF affinity and its kinase activity.<sup>18</sup>

Human EGF is found in many body fluids, including urine, milk, saliva, sweat and seminal fluid,<sup>19,20</sup> and has its highest concentration in alpha-granules of blood platelets.<sup>21</sup> The biological role of EGF includes the inhibition of gastric acid secretion,<sup>10</sup> support of growth and differentiation during fetal development,<sup>22</sup> neuro-modulation in the central nervous system,<sup>23</sup> and stimulation of epidermal growth and keratinization.<sup>3</sup> Clinical trials have shown that topical administration of human recombinant EGF accelerates wound healing.<sup>24</sup>

### Product Information

EC<sub>50</sub>: 0.05 - 5.0 ng/ml using Balb/MK cells.<sup>25</sup>

Purity: >98% by SDS-PAGE

Protein/vial: 0.1 mg/vial

Formulation: Lyophilized from 0.1 M Acetic Acid

Carrier Protein: None

Sterility: 0.2 µm-filtered, aseptic fill

Endotoxin: <0.2 ng/µg EGF

Bioburden: <10 CFU/ml

### Reconstitution and Use

To prepare a stock solution, reconstitute contents of the vial in a solution that contains 0.1 - 1.0% BSA or 1 - 10% serum in buffered saline or tissue culture media. This may be diluted before use to the final working concentration of EGF, generally 0.1 - 10 ng/ml. Additional filtration of the stock solution is **not** recommended and may result in product loss due to adsorption onto the filter membrane.

### Storage

Prior to reconstitution store vial at -20°C. After reconstitution, the product may be stored for two weeks at 2-8°C or may be stored as aliquots at -20°C. Storage of lyophilized product beyond one year or storage of reconstituted frozen stock solution beyond 3 months is **not** recommended. Repeated freezing and thawing of reconstituted product is also **not** recommended.

### References

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