Introduction

Growth hormone secreted by the anterior pituitary gland stimulate the growth of cell reproduction in humans and other animals. The biological effect of Growth hormone on somatic growth and tissue regeneration have been linked with the action of insulin like growth factor-I.

Effects of Growth hormone on the tissue of the body can generally be described as anabolic (building up) and in addition to increasing height in children and adolescents. Growth hormone has many other effects on the body, It has been demonstrated that Growth hormone stimulates growth of cartilage and other tissues by increasing the number of cells rather than by increasing cell size.(2)

Growth hormone in rats obviously increases callus formation and mechanical strength of healing bones. (12)

Treatment of Growth hormone deficiency with external Growth hormone under regular monitoring can be effective. (3)

Growth factors are proteins secreted by cells that act on the appropriate target cell or cells to carry out a specific function . (6)

Growth factors are proteins that serve as signaling agents for cells. They function as part of a vast cellular communication networks that influence such critical functions as cell division, matrix synthesis, and tissue differentiation. The results of experimental studies have established that growth factors play an important role in bone and cartilage formation,

fracture-healing, and the repair of other musculoskeletal tissues. Recently, with the advent of recombinant proteins, there has been considerable interest in the use of growth factors as therapeutic agents in the treatment of skeletal injuries. As growth factors became available as therapeutic agents, it is essential that orthopaedic surgeons understand their biological characteristics and clinical potentials .

Because growth factors are expressed during different phases of fracture-healing, it has been thought that they may serve as potential therapeutic agents to enhance bone repair. (6)

The selection of an appropriate carrier or delivery system for a particular growth factor is essential in order to induce a specific biologic effect . (6)

There are a number of potential clinical applications for growth factors in the enhancement of bone repair, including acceleration of fracture-healing, treatment of established nonunions, enhancement of primary spinal fusion or treatment of established pseudarthrosis of the spine, and as one element of a comprehensive tissue-engineering strategy that could include gene therapy to treat large bone-loss problems . (6)

Three types of action of growth factors are possible: 1)autocrine, in which the growth factor influences the cell of its origin or other cells identical in phenotype to that cell (e.g., a growth factor produced by an osteoblast influences the activity of another osteoblast), 2) paracrine, in which the growth factor influences an adjacent or neighboring cell that is different in phenotype from its cell of origin (e.g., a growth factor

produced by an osteoblast stimulates differentiation of an undifferentiated cell), and 3) endocrine, in which the growth factor influences a cell that is different in phenotype from its cell of origin and located at a remote anatomical site (e.g., a growth factor produced by neural tissue in the central nervous system stimulates osteoblast activity). Thus, a growth factor may have effects on multiple cell types and may induce an array of cellular functions in a variety of tissues . (5 , 15)

Examples of different growth factors are: bone morphogenetic protein, transforming growth factor-beta, fibroblast growth factor, platelet-derived growth factor, insulin-like growth factor and nerve growth factor . (6)

Aim of essay

The aim of essay is to throw highlights on recent trends about the effect of growth hormone and factors in musculoskeletal system.

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