البحث الرابع

Histological Study to Compare the Effect of Atomoxetine Versus Formetrol on Dexamethasone-Induced Skeletal Muscle Atrophy in Male mice

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Abstract

Back ground: Atrophy of skeletal muscles is still a serious clinical problem. Formoterol, an agonist of the B2- adrenergic receptor, may prevent this atrophy. An FDA-approved inhibitor of reuptake of norepinephrine called atomoxetine was effective in the prevention of skeletal muscle atrophy. **Aim of work:** Compare the effect of atomoxetine versus formetrol on dexamethasone- induced skeletal muscle atrophy in male mice. **Material and methods:** Forty-eight adult male albino mice were divided into six groups (8 mice each): Group 1 (control group) animals were injected intraperitoneally with 0.5ml sterile saline daily for seven days. Group 2 (dexamethasone treated group) animals were injected intraperitoneally with 10mg/kg/day dexamethasone for seven days to induce muscle atrophy. Group 3 (atomoxetine only treated group): animals received atomoxetine at a dose of 6mg/kg/day orally using insulin syringe without needle for seven days. Group 4 (atomoxetine + dexamethasone treated group): animals received both dexamethasone and atomoxetine at same doses and routes of administrationin as groups 2 and 3 respectively. Group 5 (formertrol only treated group): animals were injected intraperitoneally with 0.6 mg/kg/day formetrol for seven days. Group 6 (formertrol + dexamethasone treated group): animals received both dexamethasone and formetrol at same doses and routes of administration as groups 2 and 5 respectively. Sections were stained with hematoxylin and eosin stain & Picro Sirius red (PSR) histochemical reaction. Immunohistochemical staining was done using nuclear factor kappa-B (NF-κB) and heat shock protein (Hsp70). Area percent of collagen fibers deposition, area percent of nuclear factor kappa-B immunoexpression, area percent of heat shock protein 70 immunoexpression and diameter of muscle fiber were measured. **Results:** Group 4 (atomoxetine and dexamethasone treated group) and Group 6 (formertrol and dexamethasone treated group) showed increase in diameter of muscle fibers as compared to dexamethasone group. **Conclusion:** Formetrol has a potential role in preventing skeletal muscle atrophy.

Keywords: Skeletal muscle atrophy, dexamethasone, atomoxetine and formetrol.