الدراسات العليا

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**Title of Thesis: 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 one of numerous diseases' clinical problems. Formetrol, an agonist of the B adrenergic receptor, may prevent this atrophy. An FDA-approved inhibitor of reuptake of norepinephrine called atomoxetine was effective in preventing skeletal muscle atrophy.

**Aim of work:** This study aimed to 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 miceeach): Group I (control group) animals were injected intraperitoneally with 0.5ml sterile saline daily for seven days. Group 2 (dexamethasonetreated 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 (formetrol only treated group):

animals were injected intraperitoneally with 0.6 mg/kg/day formetrol for seven days. Group 6 (formetrol +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 reaction was done using nuclear factor kappa-B (NF-KB) and heat shock protein (Hsp70) antibodies. The area percentage of collagen fibers deposition, area percent of nuclear factor kappa-B immunoexpression, area percentage of heat shock protein 70 immunoexpression and the diameter of muscle fiber were measured by comp image analaysis.

**Results:** Group 2 (dexamethasone treated group) showed decrease in diameter of muscle fibers. Group 4 (atomoxetine and dexamethasone treated group) and Group 6 (formetrol and dexamethasone treated group) showed increase in diameter of muscle fibers as compared to dexamethasone group.

**Conclusion:** Formetrol (β2-AR) treatment induced skeletal muscle hypertrophy while, atomoxetine doesnot stimulate skeletal muscle hypertrophy, so it has a potential in the prevention of skeletal muscle atrophy.