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Catechin, an active constituent of green tea, preserves skeletal muscle activity in dexamethasone induced cachexia by increasing acetylcholine sensitivity in muscles of Wistar rats

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Chronic administration of glucocorticoids produces cachexia like symptoms such as muscular dystrophy, weight loss and skeletal muscle dysfunction. However, only limited options are available for treatment of this disease. One of the tea catechins, epigallocatechin-3-gallate attenuated skeletal muscle atrophy in cancer cachexia. In this context, we explored here (+)-catechin hydrate (catechin) for of its anticachectic activity in dexamethasone induced muscle dystrophy. Dosing of catechin at 100 mg/kg *p.o.* was continued for 5 days along with a daily dosing of dexamethasone at 0.6 mg/kg *i.p.* On the 6th day, animals were assessed for cachectic condition using changes in body weight, functional aspect of skeletal muscle such as muscle integrity, locomotor activity, handgrip strength, glucose uptake, responsiveness of skeletal muscle to acetylcholine, by estimating inflammatory parameters such as nitrite, myeloperoxidase in the gastrocnemius muscle and by evaluating plasma biochemical parameters such as triglycerides, total protein, albumin, creatinine, urea and IL-6 levels. Except for a few parameters, such as body weight, glucose uptake by hemi-diaphragm and triglyceride level, remaining parameters were significantly reversed by catechin treatment. The underlying mechanism of the myoprotective action of catechin has been postulated by the increased sensitivity of muscle to acetylcholine as demonstrated in this study, which might be responsible for prevention of muscle inflammation.

Keywords: Anticachectic activity, Cachexia, Glucocorticoids, Glucose uptake, Inflammation, Muscle dystrophy, Muscle wasting, Plasma IL-6 level, Skeletal muscle dysfunction, Weight loss