ANNOUNCEMENT

Interested members of the Ontario Veterinary College are invited to attend the Final Oral Examination for the Degree of Doctor of Veterinary Science of

Rames Salcedo

of the Department of Clinical Studies on, November 18, 2019, at 1:00 pm, in Clinical Studies Rm 2106, OVC


Examination Committee:
Dr. Luis Arroyo Castro, Exam Chair
Dr. Judith Koenig
Dr. Mark Hurtig
Dr. Thomas Koch
Dr. Scott McClure (External Examiner)

Advisory Committee:
Dr. Judith Koenig (Advisor)
Dr. Thomas Koch (Co-Advisor)
Dr. Thomas Gibson
Dr. Pavneesh Madan
ABSTRACT

Extracorporeal shock wave therapy (ESWT) has been shown to induce different biological effects on a variety of cells, including regulation and stimulation of their function and metabolism. ESWT can promote different biological responses such as proliferation, migration, and regenerations of cells. Recent studies have shown that mesenchymal stromal cells (MSCs) secrete factors that enhance regeneration of tissues, stimulate proliferation and differentiation of cells and decrease inflammatory and immune-reactions. Clinically, the combination of these two therapies has been used as treatment for tendon and ligament lesions in horses; however, there is no scientific evidence supporting this combination of therapies in vivo. Therefore, the objectives of the study were to evaluate the effects of ESWT on equine umbilical cord blood mesenchymal stromal cells (CB-MSCs) proliferative, metabolic, migrative, differentiation, and immunomodulatory properties in vitro. Three equine CB-MSC cultures from independent donors were treated using an electrohydraulic shock wave generator attached to a water bath. All experiments were performed as triplicates. Proliferation, viability, migration and immunomodulatory properties of the cells were evaluated. Equine CB-MSCs were induced to evaluate their trilineage differentiation potential. ESWT treated cells had increased metabolic activity, showed positive adipogenic, osteogenic, and chondrogenic differentiation, and showed higher potential for differentiation towards the adipogenic and osteogenic cell fates. ESWT treated cells showed similar immunomodulatory properties to non-ESWT treated cells. Equine CB-MSCs are responsive to ESWT treatment and showed increased metabolic, adipogenic and osteogenic activity, but unaltered immunosuppressive properties. In vivo studies are warranted to determine if synergistic effects occur in the treatment musculoskeletal injuries if ESWT and equine CB-MSC therapies are combined.