

Studying the possible healing effects of oleic acid and olive oil on rat tenocytes

Background: Tendinopathy or tendon injuries can affect many people who are involved in sports or in the ordinary activities and may cause a huge impact on their movements and maintaining standing posture. Symptoms include inflammation, swelling and pain in the affected area. There are several treatment options for the patients including physiotherapy, using anti-inflammatory drugs, and using alternative medicine. Although physiotherapy is the most common choice for treatment, sometimes not advisable in cases the pain prevail. Furthermore, the anti-inflammatory drugs may cause some side effects and some of these side effects are very dangerous like, liver failure. Therefore, there is a need to explore natural product with healing capabilities on tendon pathologies to reduce the risk of getting dangerous side effects of synthetic drugs. **Method:** Tenocytes will be isolated from rat Achilles tendon and cultured on plates until it became confluent layer of cells with no spaces, a scratch with sterile tip (inducing injury to the cells on the plate) will be made in the middle of plates, and the plates will be assigned as six groups: control with no treatment, olive oil, corn oil (both oils diluted with ethanol 1:1 then diluted with media 10^6 volume/volume), oleic acid (50 μM), naproxen (100 $\mu\text{g/ml}$), and paracetamol (100 $\mu\text{g/ml}$). The healing and cell proliferation of the scratch will be assessed by microscope every 2 hrs for one day using pictures and measuring the closing of the scratch by measuring the distance between the two edges of the scratch. Furthermore, the viability of cells (percentage of living cells) will be assessed using special living/dead stains like Alamar blue. **Aim:** This research aims to investigate the potential effects of oleic acid, olive oil, on healing of tenocytes after induced injury and comparing them with corn oil, and anti-inflammatory drugs naproxen and paracetamol which they considered as non steroidal anti-inflammatory drug. Oleic acid, for example, has some beneficial effects on other cell types like cardiomyocytes which was revealed in previous studies (Vassiliou, E. K., *etal*, 2009, and Al-Shudiefat A, A., *etal* 2013) to have anti-inflammatory effect and increased viability of cells when exposed to stress. Our study will use discrete primary cell line of tenocytes from Achilles tendons of rat to test the potential effects of olive oil, oleic acid, and comparing their effects with corn oil, naproxen and paracetamol on the healing of injured tenocytes using scratching assay.