

## PROSOPIS GLANDULOSA

*A cost effective, novel therapeutic agent for treating contused muscle tissue and recovering skeletal muscle strength*

### BACKGROUND

Athletic performance is an important component in all sports activities and most athletes strive to improve and optimise their performance. Supplements to enhance athletic performance and delay fatigue are often used by both recreational and professional athletes. Exhaustive exercise leads to tissue damage and inflammation. Contusion injuries are common during contact sports and can lead to secondary tissue damage as well as pain from the inflammation. Currently non-steroidal anti-inflammatory drugs (NSAID) are used to treat contusion injuries; however, these drugs may have serious side effects such as ulcers and cardiovascular complications. Alternative treatments are available; however, these can delay the healing process by interfering with signalling within the body. Studies have shown that anti-oxidants found in herbal preparations can result in prolonged performance during exercise by decreasing oxidative stress as well as aiding muscle regeneration, resulting in accelerated muscle recovery after injury.

### TECHNOLOGY DESCRIPTION

The SAMRC and Stellenbosch University have identified a plant-derived compound from *Prosopis glandulosa* pods that can be used as an effective treatment for skeletal muscle fatigue after exercise as well as muscle injury. The compound contains anti-oxidants, which are known to decrease the oxidative stress during exercise and aid muscle regeneration. During muscle injury, chemotactic factors are released by the myocytes and other surrounding cells, causing immune cell mobilization and attraction to the injured area, which then result in inflammation. The *P. glandulosa* preparation is then applied topically on the injured or bruised muscle, or taken through oral administration, depending on the type of preparation, leading to reduced neutrophil infiltration and decreased pro-inflammatory signal. The use of *P. glandulosa* on bruised muscle can strengthen the skeletal muscle, boost healing and reduce the risk of secondary muscle damage. Furthermore, it leads to accelerated muscle regeneration at success rates of at least equal to or better than conventional medication on the market. The plant preparation can be dispensed as oral preparations, such as tablets, wafers, sachets, capsules or suspensions; topical preparations as a gel, suspension, cream or ointment to the skin in the region of the damaged muscle tissue; as well as nutritional products such as nutritional health bars, liquid drinks or powders.

### VALUE PROPOSITION

An effective, novel and cost-effective plant-derived product for treatment of sport muscle injuries without any side effects. The product offers the following benefits:

- It leads to reduced muscle inflammation and accelerated muscle regeneration.
- It is more effective as an anti-inflammatory agent than known NSAID products.

- It can be added as an ingredient to existing products such as nutritional products.
- Increased recovery of exercise induced muscle fatigue.

### CURRENT STATUS

Pre-clinical animal studies on rats have been successfully completed.

### INTELLECTUAL PROPERTY STATUS & PUBLICATIONS

Patent applications have been filed in the following countries:

- South Africa (2016/07027),
- USA (10,265,365 B2),
- China (2015800256400)
- Europe (15764383,4)

Publications:

- George, c., Dietrich, d. and Huisamen, b., The effect of chronic *Prosopis glandulosa* treatment on muscle force development and fatigue tolerance in soleus muscle. *British Journal of Applied Science & Technology* 10(4): 1-10, 2015, Article no. BJUST.17032
- Huisamen, b., George, c., Genade, s. and Dietrich, d., 2013. Cardioprotective and anti-hypertensive effects of *Prosopis glandulosa* in rat models of pre-diabetes. *cardiovascular journal of Africa*, 24(2), p.10.
- George, c., Lochner, a. and Huisamen, b., 2011. The efficacy of *Prosopis glandulosa* as antidiabetic treatment in rat models of diabetes and insulin resistance. *journal of ethnopharmacology*, 137(1), pp.298-304.

### OPPORTUNITIES

The SAMRC and INNOVUS- Stellenbosch University are seeking suitable opportunities for market entry of the product as well as partners for assistance with the regulatory approvals of the technology in South Africa, China, United States and EU.



FOR MORE INFORMATION PLEASE CONTACT:

[info.ship@mrc.ac.za](mailto:info.ship@mrc.ac.za)

+27 (0)21 938 0991/ 21 808 4546