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Pain Management During COVID-19 and Scope of Ayurvedic Marijuana

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ABSTRACT

During this novel corona virus outbreak, it is found that the most vulnerable population are the old age, especially with co-morbidities like *Rheumatoid arthritis* (RA) and other related pain diseases that are at greater risk of contracting SARS-CoV-2. This infection is because of their impaired immune systems due to use of corticosteroids and certain drugs. Ayurvedic marijuana, as a safe remedy with phytochemicals known as cannabinoids have shown significant promise in basic experiments on pain management. Study shows leavesof this plant have been found effective in alleviating pain and other symptoms in patients.

Keywords: Pain management, Ayurvedic marijuana, SARS-CoV-2

1 Introduction & current scenario

The marijuana plant grows wild in Himalayas in India. In traditional use, cannabis has first been mentioned many years ago in the *Atharva veda*. The ayurvedic names of cannabis are "*vijaya*" - 'the one who conquers' and "*siddhi*" means 'subtle power'. The plant according to ayurvedic books provides basic energy, differentiation, warming and many more beneficial properties (1, 2).

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A recent paper published in *Autoimmunity Reviews* suggests that people with RA have an increased risk of contracting *SARS-CoV-2* due to their impaired immune system. Treatments in other hand for RA and related distress, including corticosteroids and drugs that modify or suppress the immune system, may increase the risk of infection (3). An alternative medication is a best solution in this case and is also need of the hour.

Experts in India are working towards legalization of medicinal use of cannabis plant. This will bring a revolution in pain management by using Ayurvedic knowledge. Currently, the *Narcotic Drugs and Psychotropic Substances* (NDPDS) *Act*, prohibits cultivation or production of cannabis plant, while reserving these rights with central and state governments. The Centre for Scientific and Industrial Research—Indian Institute of Integrative Medicine (*CSIR—IIIM*) is the first institute to get government approval for cannabis and they are working on seed varieties from all over the world (4).

2 The pain, types and action

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage. Pain helps to go away from damaging situations, to protect a damaged body part while it heals, and to avoid similar experiences to occur in future (5). Most pain resolves once the noxious stimulus is removed and the body has healed, but it may persist despite removal of the stimulus and apparent healing of the body.

There are three basic types of pain, known as Nociceptive pain—arising from tissue damage, Neuropathic pain—arising from damage to the nervous system and Other pain—arising from nurological dysfunctions like fibromyalgia and nociplastic (6, 7). Pain is a major symptom in many medical conditions, and can interfere with a person's quality of life and general functioning (8). Acute pain usually comes swiftly and has a limited duration. It's frequently caused by damage to tissue such as bone, muscle, or organs, and the onset is often accompanied by anxiety or emotional distress. Chronic pain lasts longer than acute pain and is generally resistant to medical treatment. It is usually associated with a long-term illness, such as *osteoarthritis* (OA) (9). Chronic pain can be the result of damaged tissue, but very often is attributable to nerve damage.

Bodily pain can be caused by many different factors. Some kinds of chronic pain have numerous causes. For instance, in back pain. Back pain may be caused by a single factor, or combinations. Disease conditions can also be the underlying cause of chronic pain. RA, OA and *fibromyalgia* are well-known culprits, but persistent pain may also be due to such ailments as cancer, multiple sclerosis, stomach ulcers, AIDS, and gallbladder disease.

The pain mechanism takes place in three steps. Transduction occurs along the nociceptive pathway following in this order: Stimulus triggered is converted to chemical tissue events; Chemical tissue and synaptic cleft events are then changed into electrical events in the neurons; Electrical events in the neurons are transduced as chemical events at the synapses. Transmission takes place by transmitting the electrical events along the neuronal pathways, while neurotransmitters in the synaptic cleft transmit information from a post-synaptic terminal of one cell to a pre-synaptic terminal of another. Modulation event takes place at all level of nociceptive pathways through the primary afferent neuron by up—or down—regulation. All these lead to one end result, and the pathway of pain has been initiated and completed, thus allowing us to feel the painful sensation triggered by the stimulus (10).

3 The method & mechanism – The *endocannabinoid system* (ECS)

Cannabinoids in marijuana binds to specific receptors in the brain and modulates the neurotransmitters release. The most common type of cannabinoid is the tetrahydrocannabinol (THC), which is one of the

major psychoactive components isolated from medical *Cannabis* plant. Cannabinoids can bind to Gi -protein coupled cannabinoid type 1 receptors (CB1), which is highly expressed in the pre- and post-synaptic in brain and spinal cord (11, 12) as well as the Gi -protein-coupled cannabinoid type 2 receptors (CB2) that is predominantly located in the immune system. The activation of CB1 and CB2 inhibits the formation of intracellular cyclic adenosine monophosphate (cAMP), hence leading to a tremendous reduction of the excitatory effect within the neurons (13, 14). cAMP is a messenger important in many biological processes which is used for intracellular signal transduction in many different organisms. In addition, the activation of CB2 can further prevent the mast cell degranulation and the release of pro-inflammatory mediators, making the reduction in pain sensation more drastic and effective.

4 Conclusion & way forward

The Central Council for Research in Ayurvedic Sciences, a research body under India's AYUSH ministry of traditional medicine, announced positive results from the first clinical study in India in 2018 on the use of cannabis as a restorative drug for cancer patients. In another pilot study conducted in same year, cannabis leaves-based drugs have been found effective in alleviating pain and other symptoms in patients. Chemically till date, about 568 unique molecules have been identified in the cannabis; of these, more than 60 are cannabinoids. These cannabinoids are the compounds that act on receptors in the body's *endocannabinoid system*. ECS plays a key role in endogenous pain control.

With this article, we would like to drag the attention of researchers working in the field of Ayurvedic marijuana/medical cannabis to emphasize onto the possibilities on taking the research to the next level. Conventional drugs to treat pain and related distress can modify or suppress the immune system which may increase the risk of viral infection, especially the SARS-CoV-2 at this point of time. Once the benefits are shown and robust evidence is established, the policy-makers will be open to it and will promote to industrial sectors to increase the popularity and production.

5 Declarations

5.1 Limitations

The main intention is to focus on use of alternative remedies for pain management (by using ayurvedic marijuana). Current treatments for pain and related distress are been treated by corticosteroids and certain class of hard drugs which modifies/suppress the overall immune system which increase the risk of viral infection (especially the coronavirus in this point of time) in the vulnerable old age population. Hence an approach is made to suggest an alternative medication via this article.

5.2 Competing Interests

The authors declare no conflicts of interest regarding the publication of this paper.

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