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REVIEW ARTICLE

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## CANNABIS OIL USE IN ANIMAL ANALGESIA- A REVIEW

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### ABSTRACT

The Pain, even though important it is not a pleasant experience. In the contrast to animal well-being, the search for pain minimization is being a lot of discussed with the objective to promote adequate analgesia. This literature review aims to clarify the millennial use of *Cannabis* in the treatment of several illnesses and, with that, show the utilization of *Cannabis* oil in animal analgesia.

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## INTRODUCTION

The *Cannabis*, a plant with innumerable properties from Asia, have as your subspecies more common the *Cannabis sativa*, *Cannabis indica* and *Cannabis ruderalis*, which we can differentiate by your growing, chemical and morphology (Matos *et al.*, 2017). Although your use in the past is associated with the food and fibre and oil production, the *Cannabis* become more notorious with your medical utilization (Lessa, *et al.*, 2016 & Suero-García, *et al.*, 2015). In China, there are reports of the use of this plant associated with the treatment of numerous pathologies since 2.700 b.C, but your use was reported in India and Europe over the years, as well. (Grotenhermen & Russo 2002 & Matos *et al.*, 2017). The interest in the herb grew up in the 60's among the scientists and studios, that had the same objective, catalogue *Cannabis* substances. (Carlini, 1980). The delta-9-tetrahydrocannabinol and Cannabidiol discovery realized by the teacher Raphael Mechoulam, uncountable researchers started projects with the aim of evidencing the use of these components in certain treatments. (Matos, *et al.*, 2017. Crippa & Cuardi., Hallak, 2010). Intensive research was made, and because of this was discovered the cannabinoids and your older receptors: CB1, which is localized in the central nervous system and has an effect on cognitive functions, pain, memories, motor control and hypothermia, and the receptor CB2, who is present at the peripheral system and has relation with the immune system (Kalant, 2001). Currently, studies show that cannabinoids are able to block the pain response, and demonstrated the analgesic efficacy in chronic cases (Walker JM; Huang SM, 2002).

However, despite the benefit proof about the cannabinoids for physical and mental health, your utilization is not common in some countries due to legal reasons and your discussions have been controversial and moralistic (Oliveira, 2016).

## MATERIALS AND METHODS

This study is a literature review, and a research methodology was used to describe the *Cannabis* oil in animal analgesia. The bibliographic was selected in a sequential of national and international articles and books published. The search in databases consists of Publications in Veterinary Medicine and Animal Science (PubVET), Acta Brasiliensis- UFCEG, Scientia Naturalis, Brazilian Journal of Anesthesiology, Public Health Notebook, Undergraduate thesis and recognized books. Based on literary references, were used Keywords such as "well-being", "pain" and "*Cannabis*". The texts were selected and interpreted by reading and text comprehension at the end of the database search.

## DISCUSSION

One of the first plants cultivated by humans, it was the *Cannabis*, currently, it is cultivated around the world, with an emphasis on hot seasons regions and located in America, Africa and Asia (Borges, 2004). The plant has a lot of ways to be used, but it is evident that your therapeutic use and treatment for a lot of pathologies, as

nauseous, vomits, sclerosis, neurodegenerative diseases, eating disorders, epilepsies, pains and cancers (Philipsen, 2011). In *Cannabis* we can find more than 420 chemical composes (Carranza, 2009), with emphasis on the cannabinoids and the principals study object, the CBD, THC and CBN (Honório *et al.*, 2005). The CBD (Cannabidiol) acts on the endocannabinoid system, which includes GABA (Gamma-aminobutyric acid), serotonin, glutamate, and others), and in diverse neuronal systems (Casa da Ciência, 2015). The CBD doesn't have psychoactive action and, have studies that show your neuroprotection action through the release of too much glutamate, anti-inflammatory and anti-convulsant ability (Carranza, 2009; Netzahualcoyotzi-Pietra, 2009 & Gainza, 2003). The specifics receptors, that interact with the Tetrahydrocannabinol (THC) it was described a long time ago. The THC act through these receptors (CB1 and CB2) that are found in the central nervous system. The CB1, receptor Cannabinoid type 1 is present in glutamatergic excitatory neurons and in GABAergic inhibitory neurons and it is found with an intimate connection with the central nervous system (Devinsky *et al.*, 2014). The CB2 (Cannabinoid Receptor Type 2) is connection with the Immune system, stimulating and modulating (Honório, *et al.*, 2005). The CBN (Cannabinol) is a degradation product from THC (Tetrahydrocannabinol), although your mechanism is not completely clarified, both of them have the same receptor activation function, stimulating pathways, preventing cases of pain. Furthermore, exist a big affinity between the CBN and the receptor CB2, where is possible to change the cell membrane polarity, promoting in cases of inflammatory processes (Fernández-Ruiz *et al.*, 2000). In studies, the CBN doesn't show psychoactive effects, unlike THC (Netzahualcoyotzi-Pietra *et al.*, 2009 & Spinella, 2001).

**Pain:** In Veterinary Medicine, the pain assessment is challenging, by the difficulty to interpret the animal behaviour without the verbal communication (Castro & Luna, 2008). Otherwise, the pain relief in animals is a guide more discussed, principally in the 21st century (Lumb & Jones, 2017). The veterinary consciousness about the pain, start at the third concept about the well being, that is for Molento, a complete physical and mental health, in which the non-human animal lives in constant harmony and without suffering (Ferreira, *et al.*, 2014 & Molento, 2003). The pain, is a sensorial and emotional experience, that we can associate with a lesion or potential tissue damage, felted and expressed in numberless forms according to the uniqueness of each individual (Williams & Craig, 2016). The pain minimization happened over the years by the technical development that made possible a less anaesthesia risk for the patients (Lumb & Jones, 2017). To follow a good analgesia protocol, the quantification of the pain in animals is a veterinary responsibility, which has the ability to differ physiology and emotional aspects, species and races (Mathews *et al.*, 2014 & Tranquilli *et al.*, 2013). Due to this reason, numerous scales were created and used at the clinical practice in small animals, which are based on patient behaviour (Luna, 2008). They are the Visual Analog Scale (VAS), which consists of a straight line, where is possible to gauge the intensity of the animal pain by the determined score, using a painless extremity and the other a lot of pain (Rodrigues, 2013). Visual Numerical Scale (RNS), from which it is scored numerically according to the patient's behaviour and activities (Castro, 2008) and Simple Descriptive Scale (SDS), where the evaluation it is done according to the categories: absence of pain, mild, moderate and severe pain (Castro, 2008). There are still complex scales, as the Glasgow scale, which it is responsible for doing evaluation by the patient trauma, that allows the recognition of the neurologic problem (Jennet, 1976) and the Melbourne Escale, which is made after the surgery in the animals, with the aim of evaluating the degree of pain (Mauri, 2008).

**Analgesia and pain treatment:** The pain is responsible to create an imbalance in the animal's well-being, principally in critical patients, creating changes in your own physiology. The analgesia, therefore, has an important role in the animal's life and it is characterized by the absence of sensitivity to pain without having a loss of consciousness (Revista de psicofisiologia, 1997). The method for the pain treatment is compound by a drug intervention, as analgesics and adjuvant drugs (Fantoni, 1998).

Some analgesic techniques are made, among them, we have the utilization of pre-anaesthetics medications, which is included the non-steroidal anti-inflammatory drugs (NSAIDs), the main pharmaceutical group used in the pain treatment (Andrade, 2008) responsible for blocking the Cyclooxygenase enzymes, able to transform the arachidonic acid in inflammatory mediators (Fantoni & Mastrocinque, 2002). Opioids, that have hypnotic and analgesia through specific receptors, are able to promote analgesia through the transmission block of nocice stimuli (Duarte, 2005; Lascelles, 1999). Alpha-2 agonists, that activate the receptors (Alpha 2 adrenergic) are able to decrease the liberation of nociceptive neurotransmitters (Angrade, 2008). And the local anaesthetics, are responsible to annul the nociceptive transmission to the central nervous system by blocking sodium channels (Fantoni *et al.*, 2000; Tranquilli *et al.*, 2005 & Wetmore & Glowaski, 2000).

**Cannabis as a pain reliever:** In the last decades, many scientific studies about the relation between *Cannabis* and the anti-inflammatory and neuroprotective effects emerged (Zuardi, 2008). For centuries the *Cannabis* phytotherapy has been used for the solution of innumerable pathologies, principally related to pain and other diseases, as cancer, migraines, convulsions, situations when the analgesics usually are used in the occidental medicine and do not act properly (Bonfã, 2014 & Cilio & Thiele, 2014). Then, emerged currently, studies able to show the sacred plant analgesic efficacy in humans and animals (Milstein, 1975; Hill, 1974; Noyes, *et al.*, 1975; Fairbairn & Pickens, 1980 & Barret, *et al.*, 1985). The CB1 and CB2 receptors when stimulated are responsible for mediating cytokine release and help to reduce inflammation and, consequently, pain. The modulation of the neurotransmitter liberation is realized by the CB1 receptors able to control the excessive neuronal activity, resulting as well in the pain modulation (Buchlin, *et al.*, 2010). The analgesic potential of the *Cannabis* is immense, and in a low dose, for example, the THC can provide an effect ten times greater than morphine and, in some cannabinoids studies, we can see your potential two hundredtimes greater than the morphine (Cichewicz, 2003 & Razdan, 1986). Furthermore, the *Cannabis* doesn't have contraindication and doesn't have effects on the central brain's able to control the breathing, different from opioid that is able to generate dependence and risk of respiratory arrest (Cilio e Thiele, 2014; Newsbank, 1991 & Health, 1993). In experimental models, for example, cannabinoids have proven efficacy in the chronic and acute pain (Torres & Trinidad, 2012). Although, due to the psychotropic effect of certain cannabinoids and cultural questions, *Cannabis* oil utilization as an analgesic is not yet proliferated (Kalso, 2001).

## CONCLUSION

The Veterinary Medicine has been looking for medicines that can be used in the control of pain, for the purpose of providing animal welfare. Although many advances happened over the years, occidental therapies have a collateral effect yet and increasingly it is necessary the utilization of high doses to obtain the desired control, the content of this article is highly relevant to animal health, since the *Cannabis* is responsible for the numerous illnesses cure and owns great importance acting in the pain treatment, and, despite your older utilization, doesn't have your appropriate importance yet, due to cultural and moral aspects.

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