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Cannabinoids in Dentistry: A promising therapeutic strategy

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ABSTRACT

The use of cannabinoids is a promising therapeutic proposal, which can be beneficial as a form of treatment of various pathologies in various specialties of dentistry, however, it is still little explored by dentists. The objective of this study was to identify the applications of cannabinoids in dentistry and to describe the forms of prescription of cannabinoids by the dentist, evaluating the beneficial and side effects of the use of cannabinoids in dental clinical practice. A narrative review of the literature on the subject was carried out, including publications produced between 2014 and 2024. It is necessary to emphasize that research with medicinal plants, especially the Cannabis sativa plant, has been the source of several researches on its use in the field of health. The active ingredient of the plant that has several beneficial effects is called cannabidiol (CBD) and has several properties that can generate positive effects, such as anti-inflammatory, antimicrobial, analgesic, anticancer, antioxidant and anxiolytic action. It is evident that there is still a lack of studies in the literature that prove the effectiveness of the treatment of the plant, however, there are already several positive results on the effects of this therapeutic regime.

Keywords: Dentistry, Cannabinoids, Therapeutics.

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INTRODUCTION

Currently there is a considerable change in the scientific universe, especially in the search for new therapeutic approaches in pathologies diagnosed in various areas of health, and it is of great interest to dentists the choice of alternative methods in Dentistry, such as the development of natural treatments for use in the area of oral hygiene and in the fight against oral diseases. This expansion in treatments is based on the difficulties presented over the years with the use of drugs proposed in the literature, such as patients' resistance to synthetic drugs and the adverse effects that may arise (Lowe *et al*., 2021).

Cannabis sativa is a medicinal plant widely used in the Asian and African continents for approximately 2000 years, becoming increasingly present in modern society, giving rise to several studies and scientific evidence about its use (Abidi; Alghamdi; Derefinko., 2022). Among the substances present in C. sativa, several compounds and cannabinoids stand out, the main ones being Δ9tetrahydrocannabinol (Δ9-THC), cannabinol (CBN) and cannabidiol (CBD). Among the properties of these substances are the anti-inflammatory, antimicrobial, analgesic, anticancer, antioxidant and anxiolytic capacity (Bellocchio *et al.*, 2023; Lowe *et al*., 2021).

The legislative ban on the use of the plant has resulted in adverse repercussions for the scientific community, resulting in a significant decrease in the tests and advances made in the fields of Dentistry and Medicine related to its use (Bellocchio *et al.,* 2023). With the evolution of investigations and the consequent validation through scientific evidence, CBD has been the target of several researches on its possible actions both in the field of Medicine and Dentistry, due to its therapeutic potential for a variety of favorable health conditions, also demonstrating several possibilities related to its forms of consumption, providing a wide range of use (David *et al.,* 2022).

Over time, several studies have been published, describing the adverse effects of C. sativa, including the psychoactive effects and side effects observed in various organs, thus determining its use in a negative way, however, with the advancement of research in phytotherapy, and the inclusion of this specialty even in the Unified Health System, it was realized that the benefits can be significantly greater than the risks when in therapeutic use, properly prescribed and indicated (Rendón *et al.,* 2023).

As established by Ordinance SVS/MS No. 344/1998, the authorization to prescribe controlled products intended for human use, including those derived from Cannabis, is exclusive to professionals duly registered with the Regional Council of Medicine or the Regional Council of Dentistry (Brasil, 1998). As highlighted by the National Health Surveillance Agency (ANVISA), the primary requirement for the prescription consists of the patient's submission to a consultation conducted by a legally qualified professional. After a thorough evaluation of the clinical picture and tests with other treatments, this professional is authorized to recommend the use of the plant as an

integral part of the treatment, in order to provide the essential elements for the formulation of the dental prescription (Brasil, 2020).

CBD is a compound free of psychoactive activity and has been the subject of extensive research recently due to its therapeutic effect. There are proposals that indicate its ability to collaborate effectively in periodontal therapy, in the treatment and prevention of oral mucositis, in the improvement of the healing process, as well as in the care of problems related to gums, dental caries, toothaches, among other conditions (David *et al.*, 2022).

The objective of this study was to identify the applications of cannabinoids in dentistry and to describe the forms of prescription of cannabinoids by the dentist, evaluating the beneficial and side effects of the use of cannabinoids in dental clinical practice.

METHODOLOGY

A retrospective and documentary narrative literature review was carried out. Articles were searched through the Pubmed/MEDLINE, Scielo and EBSCO Host search platforms. The search keys used were "dentistry" / "Dentistry", "cannabinoids" / "cannabinoids" associated through the Boolean operator "E". Articles published in English and Portuguese, available in full from the last 10 years, were included. Gray literature could eventually be included given the characteristic of comprehensiveness of the narrative review. The problem of the study was addressed mediated by the question: "What are the main uses of cannabinoids in dental practices and how can the dental surgeon use them?". The hypothesis raised is that the use is focused on orofacial pain, in oral hygiene products and the dentist is a professional trained to prescribe this group of drugs.

DISCUSSION

It is observed that several oral pathological alterations are being diagnosed, emerging as the most prevalent non-communicable diseases in terms of public health at the global level. This finding is accompanied by a list of the most common oral diseases in society, including tooth decay, gum disease, periodontitis, oral cancer, and dentoalveolar trauma. Consequently, a variety of new therapeutic approaches have been proposed for investigation in order to identify promising strategies in dentistry, including research with medicinal plants that can help in the evolution of patients undergoing treatment (Lowe *et al.*, 2021).

Cannabis sativa has acquired remarkable relevance in the context of scientific research. It is a plant that has both female and male forms, characterized by the presence of a wide range of components, including more than 100 compounds that have hydrocarbons called cannabinoids (Liu *et al.,* 2019). It is possible to categorize cannabinoids into three distinct groups, which can be reported as: endogenous or endocannabinoids, which refers to compounds of human or animal

origin; synthetics that are manufactured in a laboratory and phytocannabinoids that are derived specifically from the plant (Stahl., 2020).

Among these components present in the herb, three main constituents stand out: delta-9-tetrahydrocannabinol (THC), cannabinol (CBN) and cannabidiol (CBD), which were identified and structurally separated. It is notable that most phytocannabinoids demonstrate other affinities with their receptors, although they share a basic structural pattern. THC can be characterized by its highly hydrophobic and lipophilic properties. Being the most prominent compound found in cannabis, it exhibits significant psychoactive properties, which can result in adverse effects such as anxiety, pain, changes in cognition, and perception of reality. CBN, on the other hand, is a metabolite of THC and has a lower psychoactive effect (Bellocchio *et al.,* 2021).

Scientific studies have been dedicated to the investigation of CBD, due to its therapeutic effect on numerous pathological conditions. CBD is a compound that stands out for its absence of psychoactive effects and has been linked to anti-inflammatory, antioxidant, and analgesic properties (David *et al.,* 2022). Among several properties, some relationships between CBD, health, and oral disease have been identified (Yu *et al.,* 2023).

The endocannabinoid system (ECS) is a system of great relevance, being found in all mammals, it has the ability to ensure internal homeostasis and exerts a direct impact on the physiological process of the human body. ECS has an influence on several processes, both physiological and pathophysiological, which makes it an important focus for the treatment of a wide range of diseases and disorders (Lowe *et al.,* 2021). Cannabinoids identify and bind to specific receptors, mostly recognized at CB1 and CB2 receptors. They form bonds with G proteins when activated and work as modulating substances of the system (Bellocchio *et al.*, 2023)element.

Scientific research on beneficial use in dentistry is still limited, leaving uncertainties as to its qualities in terms of safety, efficacy, and toxicity (Lowe *et al.,* 2021). There are several limitations on the use of CBD in dentistry and a wide range of issues that must still be studied to better understand its behavior, mechanisms of action and correct dosage of the compound in order to enable significant advances in the field of dentistry.

Some dosage protocols for the application of CBD are already reported, being mentioned: routine protocols for dosage and administration and rapid protocol for dosage and administration, with the routine protocol being mentioned as the most suitable for the treatment of patients. It is reported that the routine protocol can reach 40mg of CBD per day, however, it is an individualized treatment and can vary from patient to patient (Bhaskar *et al*., 2021).

As established by ANVISA, the prescription of cannabidiol must be made by a legally qualified professional, registered with the Regional Council of Medicine (CRM) or the Regional Council of Dentistry (CRO), when it comes to use for dental purposes. In addition, it is mandatory to

present a medical or dental prescription for the registration and export of Cannabis-derived products for the individual's own use. The prescription must contain mandatory information, including the patient's name; commercial name of the product; Dosage; date; professional's signature; and CRM or CRO registration number.

Resolution RDC No. 660 of March 30, 2022 has some criteria and defines the procedures for importing products derived from Cannabis. According to this resolution, the first step is to register with ANVISA through an electronic form to obtain authorization to import the products. After evaluation, the agency communicates the authorization to the patient, and this registration is valid for a period of 2 years. Once authorized by ANVISA, the import can be requested through an entity related to the health area, intermediating the process. It is important to note that the quantities imported must be compatible with the quantities requested in the medical prescription (Brazil, 2022).

Some recent studies demonstrate the possible actions of CBD in the mouth and a significant increase in the demand and scientific research related to this compound and its possible activities in oral health has been reported (Bellocchio *et al.*, 2023). Most studies focus on the fact that the compound has no psychoactive effects and has beneficial characteristics for health, including its anti-inflammatory, antioxidant, analgesic, and antifungal properties (David *et al.,* 2022). There are reports in the literature that cannabinoids can become a safer alternative to synthetic drugs currently used for the treatment of oral and dental diseases, but there is still a lack of studies and scientific research to prove their safety (Lowe *et al.,* 2021).

It is reported in the literature that CBD has several potentials in oral health. In addition to its anti-inflammatory action, which may be related to the prevention of alveolar bone loss in cases of periodontitis, the compound also improves epithelial changes in ulcerative lesions generated in oral mucositis due to its antioxidant properties. Additionally, promising biological and osteoinductive properties are observed, suggesting a potential aid in cases of surgery and oral traumatology (Bellocchio *et al.,* 2023).

It is also possible to find that CBD has analgesic properties and can act on chronic pain and peripheral neuropathy and several other comorbidities (Chrepa *et al.,* 2024). There has been a growing acceptance of this therapeutic method, and practitioners are increasingly exploring this alternative (Lowe *et al.,* 2021).

CONCLUSION

We can consider that there is still a lack of studies and scientific research that prove the safety of treatment with the plant. It is possible to notice a suggestive increase in the search for possible therapeutic modalities with the use of CBD, however it is still a demand with low

acceptance by both professionals and patients, due to the scarcity of knowledge on the subject, which generates uncertainties regarding the potential benefits of the treatment, in addition to the taboo created by the recreational use of *Cannabis sativa*.

In view of this, there is a great need for further studies and scientific amplification to train professionals on the use of the compound as a form of treatment for patients who have conditions that fit the clinical indication for the use of the plant as a medication.

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