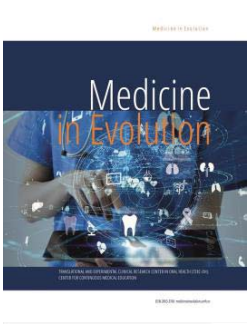
Use of dōTERRA essential oils for periodontal manifestations in mature adult type I diabetes mellitus – case report



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Abstract

Case presentation: Diabetes is similar to periodontal diseases, with a common, multifactorial disease process involving genetic, environmental, and behavioural risk factors. The aim of current periodontal therapy is to remove the bacterial deposits from tooth surface and to shift the pathogenic microbiota to one compatible with periodontal health.

Materials and method: Traditionally, various species of herbs are used to control and cure some of dental problems or systemic diseases. The literature documents that many plants themselves have anti-inflammatory, antioxidant, antibacterial, astringent and other useful properties. We presented a 59 years old female with type I diabetes mellitus case. The patient presented a mild diabetic periodontitis. We introduced in the oral therapy, besides periodontal manoeuvres, a specific recipe with essential oils from dōTERRA. In parallel with clinical surveillance there were performed microbiological tests with samples from oral biofilm.

Discussions/Conclusions: In this case report we successfully used topical extracts from plants, such as essential oils, manufactured by dōTERRA. The microbiologic lab tests showed no pathological flora.

Keywords: essential oils, plants, periodontal disease, diabetes

INTRODUCTION

The multi-microbial nature of the periodontal disease, results in making the detection and treatment a challenging task, especially when the diabetes in present. Diabetes mellitus is currently classified under two major types: type I (former called insulin-dependent diabetes mellitus), and type II (former called non-insulin-dependent diabetes mellitus) [1-3].

The scientific researches on the pharmacological properties of volatile oils from different plant species have demonstrated their effectiveness in various diseases due to their antibacterial, antiseptic, antiviral, antispasmodic, analgesic, antioxidant, anti-hemorrhagic, hypotensive, antimicrobial, sedative or skin regeneration properties, etc. [4]

In this study the dōTERRA essential oils are obtained by one of the two primary extraction methods: steam distillation or cold pressing (unique process for citrus peel and tree bark). The final product is an essential oil with a high therapeutic degree. By contrast, lower grade essential oils are often extracted by chemical processes or using solvents to increase profit [5-7].

Aim and objectives

The aim of this study was to assess the influence of some of dōTERRA essential oils/ products in addition to the traditional periodontal treatment in a case of diabetes mellitus type I installed in a mature adult patient.

CASE REPORT

I. Anamnesis

The patient CI, female, 59 years old, from the urban environment, with insulin-dependent diabetes mellitus and AHT, presented to the dental office for gingivo-periodontal manifestations.

The medical analyzes performed before the dental consultation revealed the following: the patient had diabetes mellitus type I (insulin-dependent) under control, AHT grade 2 with a very high CV risk, mixed heart disease, mixed dyslipidemia. The patient had a history of treatment with Arcoxia for 8 days for anti-inflammatory reasons, under prescription.

The patient already has used products based on essential oils (without specialist consultation), for internal use.

II. Clinical examination data

At the clinical examination (Figure 1) a good oral hygiene was found, with an oral mucosa in a functional state, without apparent periodontal damage, despite the existence of a lower diastema (over 5 mm). The presence of simple carious lesions, partially treated, was also found.

The patient had specific halitosis, grade 2 dental mobility, without heavy gingival bleeding.

The periodontal diagnosis was diabetic periodontitis, stage I, grade A.

In the dental office we considered that a microbiological diagnosis was needed. In addition, we followed the development of pathogenic bacteria (beta-hemolytic bacteria).

Figure 1. Initial appearance of the lower arch with the presence of diastema (CI, female, 59 years old)

III. Laboratory data

The microbiological analysis consisted in taking of two samples (Figure 2) from the immediate location of the carious lesions, with the help of a sterile swab, but insisting on the area of the gingival sulcus.

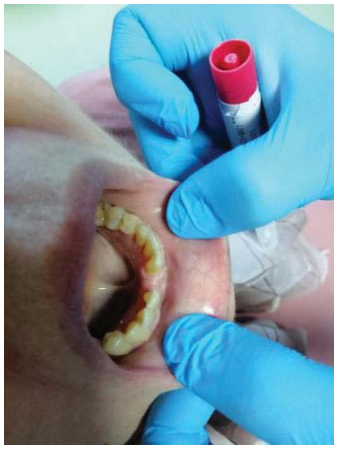

Figure 2. Intraoral aspect before microbiological sampling (CI, female, 59 years old)

The plates were kept incubated at 37°C for 72 hours, following the daily bacterial growth, and insisting on the development of pathogenic (beta-hemolytic) microorganisms. There were used plates with culture media (Figure 3) as: blood agar; Chapman; MacConkey; ADCL and Sabouraud (for fungi).

Figure 3. Microbiological culture environment (CI, female, 59 years old)

The data of the laboratory analysis were the following: beta-hemolytic and pathogenic colonies on enterobacteria media did not develop, also there were no fungal colonies.

As result we concluded that the positive clinical results are due to the observation of this case in a phase after using essential oils, and before the presentation at the dentist's office.

IV. Treatment and evolution

The case confirmed a controlled insulin-dependent diabetes with normoglycemia, which led us to only add oral solutions for prevention of future periodontal lesions. So our main therapeutic objective was to maintain the results at the oral level.

In this case, the oral working protocol consisted in initial periodontal therapy then we added products based on essential oils with oral use, one of them according to an original prescription.

Thus, we created the following administration scheme:

1. Incense essential oil - Frankincense® (dōTERRA): 1 drop sublingually, in morning and evening (with pipette), internal use.

2. Myrrh Essential Oil - Myrhh® (dōTERRA): prepared as a mouthwash according to an original recipe (1 liter in a glass container). The mouth was rinsed at least 2 times a day, actively, with a dose of 40-50 ml. In addition, a small amount of mouthwash was swallowed for maximum effect. It was supplemented with gingival massage with a clean finger.

3. Toothpaste with On Guard® Essential Oil Blend (dōTERRA): the toothpaste was used 2-3 times a day. Each group of teeth was brushed for at least 10 seconds, with back and forth movements from the gum to the tooth, thus preventing food debris or biofilm from being inserted under the gum. The tongue and mucosa of the cheeks were washed as well. The On Guard® Mouthwash was then used for complete hygiene [8, 9].

4. On Guard® Mouthwash (dōTERRA): was used at least 2 times a day, in morning and evening, after dental brushing. The mouth was rinsed actively with a dose of 40-50 ml mouthwash, spited out, without rinsing again with water. As an alternative method, mouthwash could be used before dental brushing [10].

5. Original mouthwash prepared with dōTERRA essential oils according to our own recipe:

In a glass container we pour 1 liter of distilled water and we added the following essential oils:

- 5 drops of mint, tea tree, wild orange and spearmint essential oils;
- 3 drops of clove, and cinnamon essential oils, and
- 2 drops of incense, and myrrh essential oils.

The mouthwash was used in a similar mode like On Guard® Mouthwash. For maximum effect a small amount of prepared mouthwash could be swallowed.

Thanks to the stable clinical situation and the microbiological results through which no pathogenic flora was detected, the patient was kept under surveillance by periodic checks once every 3 months. The patient previously administered herself essential oils (internally). We added original products based on essential oils with action on the oral cavity. Therefore we considered that it was only necessary to maintain the clinical situation and regular monitoring every 3 months.

At the next check session (after 3 months) the patient presented stabilized periodontal parameters. We performed another laboratory microbiological test, and its results showed no signs of oral pathogens (Figure 4).

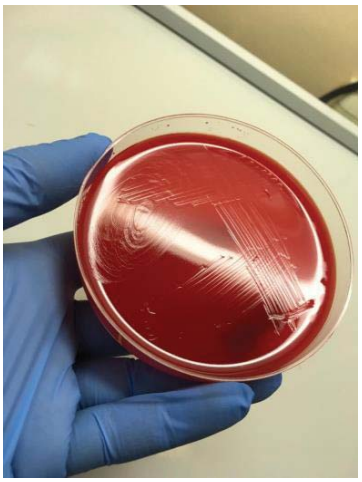

Figure 4. Second lab examination with no pathological development after 3 months (CI, female, 59 years old)

DISCUSSIONS

The action of diabetes itself on the gums is based on disruption of local metabolism and accumulation of toxic intermediates (tissue acidosis), and vascular and nerve changes (meiopragy, arterial and venous vascular suffering, diabetic neuritis). According to the literature, the periodontal pathology in diabetes has a particular form. The microorganisms frequently detected in insulin-dependent diabetes are: Streptococci, Actinomyces/ Aggregatibacter, Veillonela parvula or Fusobacterium [1, 3, 12, 13].

Precursors of the chemical compounds contained in phytotherapeutic products, the essential oils can be considered first-line effective in the treatment of periodontal diseases, partly due to their antifungal and antibacterial nature [11, 12]. Frequently used in aromatherapy or massage, pure and chemically unaltered essential oils are today studied in numerous scientific articles. To maintain general health, essential oils are included as supportive supplements in internal administration. They also can be used as initial-local or complete treatment, in our case – diabetic periodontal manifestations [6, 7, 13].

Different essential oils combinations can be obtained through formulas specifically stated in manuals and guides [14-16]. The use of essential oils is specific to each organ/system, addressing primarily the cause, but following the symptoms. Therefore they can be used in standardized preparations, prepared according to the original recipe of the manufacturer (dōTERRA in the presented case) or can be prepared according to personal/ original formulas (mouthwash, ointments or toothpaste). Local and topical modes of administration can be combined with other (internal) routes of administration of other essential oils for better results.

In our case, in the presence of type I diabetes, incense, myrrh, mint, tea tree, wild orange, spearmint, clove, and cinnamon dōTERRA essential oils contributed to stabilize the diabetic periodontitis. They acted by controlling and inhibiting the oral biofilm in synergy with the classic periodontal therapy (biofilm mechanical elimination; supra and subgingival scaling; use of chemical and physical agents). Their positive effect was proved through the microbiologic lab tests performed in our study.

CONCLUSIONS

The bacteria with a predisposition for the gingival area and those that colonize the subgingival space are incriminated in the maintenance of many systemic diseases, not only periodontal diseases. Keeping them within limits of non-pathogenicity can be achieved by

appropriate oral hygiene (prophylaxis and maintenance of oral health), and moderate and limited quantitative consumption of sweet or intensely acidic foods.

In this case of a mature adult diabetes mellitus type I, the establishment of oral essential oil treatment proved to be a real support for the health of the oral cavity, and the body as a whole.

REFERENCES

1. Lindhe J, Lang N, Karring T. Clinical Periodontology and Implant Dentistry. Blackwell Munksgaard, Oxford UK, 2015
2. Khumaedi AI, Purnamasari D, Wijaya IP, Soeroso Y. The relationship of diabetes, periodontitis and cardiovascular disease. Diabetes & Metabolic Syndrome: Clinical Research & Reviews, 2019; 13: 1675-1678
3. Preshaw PM, Bissett SM. Periodontitis and diabetes. BDJ, 2019; 227: 577–584
4. Madia VN, De Angelis M, De Vita D, Messore A, De Leo A, Ialongo D, Tudino V, Saccoliti F, De Chiara G, Garzoli S, et al. Investigation of Commiphora myrrha (Nees) engl. oil and its main components for antiviral activity. Pharmaceuticals, 2021; 14, 243, https://doi.org/10.3390/ph14030243
5. Başer KHC, Buchbauer G. Handbook of Essential Oils: Science, Technology, and Applications, 2nd Ed., Taylor and Francis Group USA, 2016
6. Dagli N, Dagli R. Possible use of essential oils in dentistry. J Int Oral Health, 2014; 6(3): i-ii
7. Dagli N, Dagli R, Mahmoud RS, Baroudi K. Essential oils, their therapeutic properties, and implication in dentistry: A review. J Int Soc Prevent Communit Dent, 2015; 5: 335-340
8. https://www.doterra.com/US/en/blog/spotlight-doterra-on-guard-protective-blend
9. https://doterra.com/US/en/p/onguard-natural-whitening-toothpaste
10. https://media.doterra.com/nz-otg/pips/onguard-mouthwash.pdf
11. Dobler D, Runkel F, Schmidts T. Effect of essential oils on oral halitosis treatment: a review. Eur J Oral Sci, 2020; 128: 476–486
12. Marsh PD, Lewis MAO, Rogers H, Williams D, Wilson M. Oral Microbiology, 6th Ed., Munskgaard Elsevier, 2016
13. Palmer R, Floyd P. Periodontology, Springer Cham, 2021
14. https://www.doterra.com/US/en/blog/science-research-news-essential-oil-mouthwash-trials
15. https://www.doterra.com/US/en/cptg-testing-process
16. https://www.doterra.com/US/en/wellness-topics-beautiful-teeth-and-fresh-breath