

Meaningfulness of apitherapeutic approaches using the example of primary dysmenorrhea

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ABSTRACT

Aim: To identify the various recommendations in various books on apitherapy and compare these to other methods from alternative and complementary medicine in order to determine whether apitherapy is the treatment of choice for patients with primary dysmenorrhea.

Methods: Books were identified and analyzed and recommendations were summarized. Afterward, a literature search was performed regarding the evidence of bee products and dysmenorrhea. Then, the recommendations from alternative and complementary medicines were compared to the results of the first analysis.

Results: In total, 27 out of 70 books on apitherapy recommended bee products for primary dysmenorrhea. In these 27 books, 15 different recommendations were found. However, only the recommendations of one author matched the current evidence which shows that royal jelly and honey are able to improve primary dysmenorrhea. Comparison to other methods from alternative and complementary medicine showed that evidence of some methods is much better than the evidence for apitherapy, meaning that apitherapy may not be considered the treatment of choice.

Conclusion: Treatment recommendations of apitherapy are contradictory, inconsistent, and mostly not evidence based. Apimondia, the International Federation of Beekeepers' Associations, should promote scientifically sound information by involving scientists on the board of the committee on apitherapy who do not promote unproven methods.

ARTICLE HISTORY

Received September 17, 2017

Accepted November 19, 2017

Published January 07, 2018

KEYWORDS

Apitherapy; dysmenorrhea;
honey; royal jelly;
gynaecology

Introduction

Apitherapy is defined as the use of products from the beehive (bee venom, propolis, pollen, honey, royal jelly, dead bees, apilarnil, wax), beehive air or therapeutic sleep on a beehive to treat various medical conditions. It has to be considered as a branch of alternative medicine because most proponents of apitherapy make claims for its health benefits which are largely not supported by evidence-based medicine.

Today, there are many societies for apitherapy in the world. There is a commission for apitherapy at the Apimondia, the International Federation of Beekeepers' Associations, which claims to promote scientific, ecological, social, and economic apicultural development in all countries and the

cooperation of beekeepers' associations, scientific bodies, and of individuals involved in apiculture worldwide. Apimondia's international apicultural congresses include apitherapeutic sessions, and the topic of apitherapy is of great interest among beekeepers. Unfortunately, there is nothing which may be considered as a textbook on apitherapy or any book which summarizes the basic and generally accepted apitherapeutic concepts and treatment recommendations. On the other hand, there will be a great confusion for anyone who is interested in apitherapy after studying several books, because the contradictions and inconsistencies would be realized sooner or later. Also, it would be noticed that one author recommends treatment X in disease A

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while another recommends treatment Y and yet another treatment Z.

Since it seemed impossible to analyze all recommendations in all books on apitherapy, it was considered important to select an appropriate topic which was to serve as a case example. Primary dysmenorrhea, i.e., complaints of women in association with the menstrual cycle, was selected for various reasons. It is a very frequent problem in women, which has considerable economic importance because it leads to an inability to work, and falls into the field of expertise of the author; most importantly, however, prominent protagonists of apitherapy (Stangaciu, Cherbuliez, Domerego, Mateescu) have declared that primary dysmenorrhea can be treated with apitherapy [1–5]. (Since not everybody may be familiar with primary dysmenorrhea, the main facts are summarized below.)

General Information on Primary Dysmenorrhea

Primary dysmenorrhea is defined as cramping pain in the lower abdomen occurring just before or during menstruation, in the absence of other diseases. It is a very common problem and is associated with symptoms such as headache, nausea, bloating, vomiting, diarrhea, and cramping abdominal pain. Between 16% and 91% of all women suffer from primary dysmenorrhea, with 2%–29% suffering to a high degree [6]. Primary dysmenorrhea leads to some economic problems, since it is associated with an inability to work. Older women, women who have given birth to many children or take birth control pills suffer less from dysmenorrhea, while stress and a positive family history are factors associated with a higher probability of dysmenorrhea [6]. The biological background of primary dysmenorrhea has not been fully elucidated. According to our current understanding, the disintegration of endometrial tissues releases PGF₂ (prostaglandin), which leads to cramps of the myometrium, ischemia in the muscular tissues, and irritation of nerve endings. Symptoms may improve over time, after pregnancies, with the use of contraceptives and better stress management. According to the current state of knowledge, smoking, diet, obesity, and depression have no influence on the incidence and severity of complaints [6].

Primary dysmenorrhea, which the menstruation itself is the cause of pain, must be distinguished from secondary dysmenorrhea where changes in the anatomy of the uterus (uterine fibroids, cysts, adenomyosis, cervical stenoses and polyps, and

endometriosis) or intrauterine devices are responsible for the symptoms. Accordingly, it is necessary to exclude secondary dysmenorrhea.

Treatment concepts of academic medicine include analgesics (non-steroidal anti-inflammatory drugs; aspirin, naproxen, and ibuprofen) which inhibit the production of prostaglandins, oral contraceptives which reduce the volume of menstrual fluid or progestins (levonorgestrel-releasing intraruterine system, the etonogestrel-releasing subdermal implant, depot medroxyprogesterone). Non-steroidal anti-inflammatory drugs may also be combined with oral contraceptives or progestins if necessary [7]. Success rates range between 64% and 100% [6]. However, about 10% of all affected women do not respond to the above treatments, and others show contraindications to the use of such drugs, e.g., thrombosis. Accordingly, those with an aversion to academic medicine would look for alternatives. There are few data on the use of alternative methods for dysmenorrhea. A Turkish study showed that 70% of 428 study participants (students) used complementary and alternative medicine for primary dysmenorrhea [8]. Another study from Burkina Faso reported that honey is used in that indication [9].

In summary, primary dysmenorrhea can be considered to be a good example to analyze the variability of apitherapeutic treatment recommendations and compare these to the current scientific evidence.

Material and Methods

In order to analyze the current situation of apitherapy and to determine which therapies are recommended, a systematic analysis of 69 books on apitherapy was done. They were mainly from Germany but the books from English-speaking countries, France, and Italy were also included. It was ensured that the analysis included books from major opinion leaders such as former and current presidents of the Apimondia Scientific Commission on Apitherapy and presidents of societies for apitherapy. Also, it was ensured that all books in German, English and French entered the analyses which were found in a Google search with the terms “Apitherapie,” “apitherapy” “apithérapie.” The book in Italian was only included because it was the book from Mateescu, the current president of Apimondia’s commission on apitherapy.

Afterward, recommendations from all the books were summarized and the mentioned information on exact dosages and sources of information was

studied. The results were compared to the findings of scientific studies on bee products. These studies were identified using PubMed and the search term “dysmenorrhea” and “premenstrual syndrome” combined with the names of various bee products and the term apitherapy. Then, other treatment approaches for dysmenorrhea from the field of alternative, complementary or integrative medicine were looked for. The suggested methods were rated regarding proven efficacy, side effects, costs, and availability. This was done in order to decide whether apitherapeutic approaches should be used as the methods of choice in this respect.

Results

Apitherapeutic recommendations for the treatment of primary dysmenorrhoea

No recommendations were found in 42 books on apitherapy [10, 13, 15–19, 21, 23–29, 33–35, 37–40, 42–44, 46–48, 51–55, 60–64, 67–70, 72].

The remaining 27 books suggested the following treatments for primary dysmenorrhea:

1. Bee venom acupuncture [31]
2. Royal jelly [20]
3. Royal jelly and honey [58,59]
4. Royal jelly and pollen [4,11,12,65,71]
5. Royal jelly and propolis [30,32,56]
6. Royal jelly, honey and propolis [43,50]
7. Royal jelly, pollen and propolis [49]
8. Royal jelly, pollen and honey [41,57,73]
9. Royal jelly, pollen, perga, honey, aromiel (chestnut honey with essential oils, here sage, chamomile and cypress oil) [1]
10. Royal jelly, aromiel (honey with essential oils, here sage and cypress oil) [3]
11. Honey [22]
12. Honey massage [36]
13. Pollen [14]
14. Pollen, perga, aromiel (honey with essential oils, here thyme honey with majoram, rosemary and peppermint oil) [2]
15. Propolis [45,66,74]

Royal jelly is by far the most frequently recommended bee product, followed by pollen and propolis. Overall, the list shows 15 different recommendations in 27 books. Five authors agreed that royal jelly and pollen are best for the treatment of primary dysmenorrhea. In all other cases, there are fewer recommendations.

Analyses of the books were based on finding references which could support their

recommendation. It was found that only a few books provided this information. Beyer [12] and Uccisic [71] refer to the research work by Bogdan Tekavcic, Uccisic [71] mentions work by Izet Osmanagic, and Khismatullina [41] refers to work from Porkraichich and Osmaginich from 1978. Unfortunately, the scientific work of Tekavcic, Porkraichich, and Osmaginich cannot be located in the medical databases at all and the scientific work of Osmanagic refers to melbrosia and complaints during the menopause. Hainbuch [31] referred to a textbook of pharmacopuncture by Kirok Kwon. However, no full text article on a study of pharmacopuncture was found. Thus, only four books provide information on the sources. However, these references did not meet the scientific standards.

Interestingly, only one book stated the basic beliefs behind the apitherapeutic treatment. Cherbuliez and Domerego [1] believed that bee products rejuvenate the uterus and repair degenerative damage. This theory, however, was not supported by any data.

A literature search of PubMed showed that two trials have studied the use of bee products for primary dysmenorrhea. The first investigated royal jelly and found that it facilitates the premenstrual syndrome [75]. Participants in this study took 1 g of royal jelly on a daily basis. The second study compared an analgesic to a dose of honey (1.2 g/kg of body weight), which the participants had to take from the 15th day of the menstrual cycle. As a result, honey was found to be equally efficient [76].

Another publication mentions that pollen from *Typha angustifolia* (lesser bulrush, narrowleaf cattail or lesser reedmace) is used in the treatment of dysmenorrhoea [77]. Experimental animal studies confirm the anti-inflammatory properties of this specific pollen [78]. However, it remains unclear whether this type of pollen is collected by bees and if the results from animal research can be transferred to the situation in humans.

In order to compare apitherapeutic approaches with other alternative and complementary medicines, the suggested methods were assessed. They included (in alphabetical order): acupressure, acupuncture, anthroposophical therapy, aromatherapy, Bach flowers, biophoton therapy, leech therapy, iron, enzymes, food (fat reduction, avoidance of tyramines, coffee, cola, alcohol), homoeopathy (and homoeopathic combination remedies/dysmenorrhea-Gastreu® S R75; Salts/Biominerals), combination therapies (vitamin AE-lycopene, trace elements, magnesium, calcium), magnet therapy, manual therapy, moxibustion, neural

therapy, omega-3 fatty acid, orthomolecular therapy (vitamins B1, B3, B6, E, magnesium), order therapy (exercise, relaxation), physical therapy (heat applications, transcutaneous electrical nerve stimulation, Kneipp applications, color therapy), osteopathy, phytotherapy (chasteberry, lady's mantle, yarrow, tansy, chamomile flowers, groundsel, shepherd's purse, cohosh, St. John's wort, lemon balm, black cohosh, evening primrose oil, nettle), and traditional Chinese herbal medicine. These therapeutic suggestions were found in various books on complementary medicine as well as on the Internet [79]. Interestingly, some evidence-based treatments were not mentioned by the protagonists of alternative and complementary medicine. These include ginger, Kampo medicine, and cinnamon. In particular, the role of ginger has been well supported by numerous studies. Analyses of the evidence behind these suggestions can be summarized as follows:

Unsuitable, demonstrably ineffective or harmful methods: magnetic therapy, osteopathy, manual therapy, avoidance of coffee, cola and/or alcohol, homoeopathy, and relaxation therapy [80–85].

Possibly useful methods: traditional Chinese herbal medicine, acupuncture and acupressure, moxibustion, omega-3 fatty acids, vitamin B1, vitamin E, magnesium, exercise, yoga, chaste tree, yarrow, toki-shakuyaku-san – Kampo medicine from Japan, cinnamon [81,86–95].

Probably sound means: aroma oil massage (lavender oil, rose oil), and the inhalation of lavender scent or fragrance saffron treatment [96–99].

Demonstrably sound means: local heat application, transcutaneous electrical nerve stimulation, and ginger [81,92,100,101].

Discussion

Famous protagonists of apitherapy consider primary dysmenorrhea a problem suitable to be improved by apitherapy. Thus, the choice of this condition for the comparison of treatment recommendations appears appropriate. This study showed that:

- Only a fraction of the books on apitherapy cover a major problem in gynecology. However, for various reasons, dysmenorrhea might not have been mentioned. These reasons include the focusing of some books only on one bee product which might not have been useful for apitherapy and others only presented scientific evidence. In these books, further studies are needed to

consider apitherapy as a reasonable approach for primary dysmenorrhea. Interestingly, one famous protagonist, Stefan Stangaciu, claimed on his website that apitherapy is reasonable, but it was not mentioned in his books [5,68,69]. On the contrary, in his most recent work, the entire field of gynecology has no longer been mentioned as it was before [69].

- Most books on apitherapy could not have accounted for any of the scientific data on honey and royal jelly because their dates of publication are prior to the publication of the studies. Also, none of the most recent books referred to these studies.
- The recommendations in the various books on apitherapy barely correspond to each other. Remarkably, Domerego and Hainbuch suggested different treatments in their respective books [1–3,30–32]. This raises the question on which basis the recommendations had been made. With the exception of a few books, no sources of information are given.
- A justification for the apitherapeutic treatment approach can only be found in the book by Cherbuliez and Domerego [1]. Even if their hypothesis was not supported by any researches, it is important that the background of the therapy concepts is presented.
- In only a few cases (3 books), there are information about the dosage of bee products and treatment duration. This makes it impossible for the readers to apply the bee products correctly. In the presented context, only the books of Neukirch [58,59] stand out positively. Her recommendation was consistent with the latest scientific findings, not only with respect to the correct bee products (honey and royal jelly) but also with respect to the correct dosages. Neukirch recommended 3–4 tablespoons (30 g) of honey in herbal tea, totaling 90–120 g honey per day. Neukirch's "women's power tea" also contains the therapeutically effective yarrow. Unfortunately, the basis of the recommendations could not be found.

Combining the results from apitherapy and alternative medicine raises the question which treatment approach should be chosen by women suffering from primary dysmenorrhea? From a patient's perspective, treatment concepts should be effective, safe, with few side effects, inexpensive, and easily available. In particular, treatments which require a therapist may not be as interesting because a therapist

may not be available when the complaints appear. Taking these premises into consideration, the following treatment concept appears to be useful:

Women with the desire for safe contraception will appreciate that the reduction of dysmenorrhea is one of the pleasant side effects of birth control pills. Furthermore, painkillers can alleviate pain with or without birth control pills. In cases where standard treatments are contraindicated or not desired by the patient, effectiveness, safety, low cost, and availability should be considered when choosing a treatment. Taking this into account, treatments may be placed in the order in which they should be tried:

1. Local heat applications – simple, safe, inexpensive, available everywhere.
2. Exercise – simple, safe, free of charge, available everywhere.
3. Aromatherapy with lavender oil (including lavender oil massage) or vitamin B1 or omega-3 fatty acids – simple, safe, inexpensive, readily available. Omega-3 fatty acids can also be dietary perform (e.g., linseed oil).
4. Acupressure – easy to learn, safe, inexpensive, available after learning anywhere, anytime.
5. Ginger – simple, possible adverse effects (heartburn, dizziness), inexpensive, readily available.
6. Chaste berry – simple, possible adverse reactions (itchy rash, headache, gastrointestinal complaints, interactions with dopamine receptor antagonists (antipsychotics or anti-emetics)), inexpensive, readily available.
7. Honey and/or royal jelly – simple, possible adverse reactions (allergies), inexpensive, readily available.
8. Acupuncture/moxibustion – simple, few side effects (dizziness, redness of the skin, injuries of blood vessels), costs for the therapist, tied to a therapist.
9. Transcutaneous electrical nerve stimulation – comparatively complicated with contraindications for users inside with electronic implants, cardiac arrhythmias, seizure disorders, and skin diseases in the application, adverse effects possible (increased pain, skin intolerance for electrode gel, muscle pain), costs for the therapist, tied to a therapist.

This algorithm is based on rational considerations. It has been shown that bee products are not among the first, second, or third choice therapies. They may be used by women who have a trend to bee products. However, a further question is whether women will be ready to eat around 100 g of honey every day for 2 weeks. Participants in some studies have been given much smaller amounts of honey every day which were not tolerated [102,103].

Acknowledging the general desire of patients for gentle and natural medicine, it sounds reasonable to develop treatment concepts which are effective and associated with low side effects and costs. They should not be irrational and esoteric. Holistic treatment should not be an empty notion but it should focus on the patients' needs. A good therapist must be familiar with all the named treatment concepts in order to counsel a patient appropriately. Unfortunately, today, most of alternative medicine therapists have one or a few concepts and want to heal all diseases by one means, e.g., homoeopathy.

There are some problems associated with this analysis. It may not have been possible to identify all books on the subject. Some books were published by the authors on their own, which were more difficult to find, and there may be others which were not identified. Second, the analyses focussed on books in German, English, and French. It is well known that there is substantial work on apitherapy in Russia and Romania. They could not be included because the author cannot comprehend the languages. However, this analysis used several books from these countries which were translated into the languages covered here.

Using the example of primary dysmenorrhea, it was shown that most apitherapeutic recommendations are not evidence-based and there is no common concept behind apitherapy. If this therapy was able to become a respected field of medicine, both aspects must have been changed. Thus, it is proposed that, unlike the past, Apimondia should select more informed presidents and committee members in order to promote scientific information.

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