



# Apitherapy and Gynaecology –To What Extent Can Methods from This Area Be Alternatives to Conventional Ones?

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## Abstract

**Background:** Some holistic apitherapists claim that conventional medicine can be replaced by apitherapy. This claim has never been substantiated or falsified.

**Methods/Design:** Since holistic apitherapy is mainly promoted in books, we analyzed 135 books on apitherapy written in either German, English or French. We also compared the recommendations with findings from preclinical and clinical studies on the various bee products.

**Results:** A maximum of 6 topics were discussed in apitherapy books in relation to the top 20 gynaecological diagnoses. However, the mean was only 1.6 topics. We also found that the important topics like endometriosis, ovarian cysts, pelvic pain and vulvodynia were not discussed in any of books. Furthermore, we found that there was significant variation in the treatment recommendations for most of the top 20 gynaecological problems.

**Conclusion:** The claim that conventional medicine can be replaced by apitherapy is not supported by our analysis. The comparison between apitherapists' recommendations and preclinical and clinical studies reveals that most recommendations are not supported by scientific evidence.

**Keywords:** Apitherapy; Gynaecology; Health claim; Bee product; Honey; Propolis; Royal jelly

## Introduction

Obstetrics and gynaecology is the medical specialty that encompasses the two subspecialties related to pregnancy, childbirth, and the postpartum period (obstetrics) and the health of the female reproductive system – vagina, uterus, ovaries, and breasts (gynaecology). Additionally, there are various subspecialties. Examples are

- Maternal-fetal medicine – a subspecialty focusing on the medical and surgical management of high-risk pregnancies and surgery on the fetus.
- Reproductive endocrinology and infertility - a subspecialty dealing with the causes and treatment of infertility
- Gynaecological oncology - a subspecialty centering on the medical and surgical treatment of women with cancer of the reproductive organs
- Female pelvic medicine and reconstructive surgery - a subspecialty concentrating on the diagnosis and surgical treatment of women with urinary incontinence and prolapse of the pelvic organs

- Advanced laparoscopic surgery
- Family planning - a subspecialty with the emphasis on contraception and pregnancy termination (abortion)
- Pediatric and adolescent gynaecology
- Menopausal and geriatric gynaecology

A variety of evidence-based treatment options exist for these different diseases which are part of national and international standards and guidelines.

An increasing number of patients use complementary and alternative medicine (CAM), aside from this field of conventional medicine. The terms "alternative" and "complementary" are often used interchangeably. However, they refer to different concepts:

- "Complementary" use means a non-mainstream practice used together with conventional medicine,
- "Alternative" use means the use of a non-mainstream practice in place of conventional medicine. (<https://www.nccih.nih.gov/health/complementary-alternative-or-integrative-health-whats-in-a-name>)

There is often no or not sufficient data to support the value of many CAM methods. Often, a placebo effect may improve symptoms or the spontaneous course of the disease or regression to mean may explain the effects observed and discussed by patients and proponents of these methods. In the field of oncology, it has been shown that prognosis is poorer with alternative medicine [1].

One CAM treatment concept is holistic apitherapy. It is defined as the use of substances produced by honeybees (such as venom, propolis, pollen or honey and others) to treat various medical conditions. Today, apitherapy is widely promoted by apitherapeutic societies all over the world and beekeepers (<https://apitherapy.com/addresses/societies/>; accessed April 2<sup>nd</sup>, 2020). Holistic apitherapy is largely promoted in apitherapeutic congresses and beekeeping congresses but especially in books. As has been shown in several analyses, the books on apitherapy do not comprise the scientific evidence but rather the personal beliefs of holistic apitherapists [2-6]. This is true for cancer, dysmenorrhea, menopausal problems, benign prostate, hyperplasia and allergic seasonal rhinitis [2-6]. However, the books on apitherapy are meant to be guidelines for apitherapists and other practitioners.

Apitherapists have also claimed that apitherapy can cure all or almost all diseases [7,8]; (<https://apitherapy.com/en/apitherapy-data-base/apitherapy/diseases-that-can-be-treated-through-apitherapy/>; accessed October 9<sup>th</sup>, 2020). These claims have not been validated yet. Since it is impossible to assess the entire field of medicine, we analyzed to what extent apitherapy could replace or complement treatments for problems in the field of gynaecology, excluding the surgical and oncological aspects.

Despite this, even a first glance conveys the impression that the recommendations alone for one specific medical problem are quite

controversial. Thus, an interested reader might become even more confused after having read all the available information, realizing in the end that there is no generally accepted treatment for a certain disease. For example, in an analysis of 129 books on apitherapy, 29 different recommendations on what was thought to be best for the treatment of seasonal allergic rhinitis were found. This is all the more remarkable since the topic was only mentioned in 50 books [3].

## Material and Methods

Based on data from the Central Institute for Statutory Health Care and various publications on the subject, we identified the diseases and symptoms most frequently dealt with in the gynaecological field.

Since the information on apitherapy can be found mainly in books, we identified 135 books on apitherapy using the search terms "apitherapy", "apitherapie" and "apithérapie" as well as the names of various bee products on bookseller platforms and the JUST find system of the Justus-Liebig-University Gießen, Germany, which comprises 337 databases from the EBSCO Discovery Service. There was no pre-selection of the books except the restriction to the English, French and German languages.

Based on our search regarding the most eminent problems in the field, all the books were analyzed in detail for apitherapeutic recommendations regarding the following diseases (in alphabetical order):

1. Abnormal uterine bleeding, Menorrhagia (heavy periods)
2. Breast lumps, fibroids & common breast problems
3. Chlamydia
4. Condylomas, dysplasia / human-papilloma-virus-infections
5. Decreased libido (decreased sex drive)
6. Dysmenorrhea (painful periods)
7. Dyspareunia (painful intercourse)
8. Endometriosis
9. Gonorrhoea and vaginitis
10. Incontinence
11. Infertility
12. Lichen sclerosis
13. Menopausal complaints
14. Osteoporosis
15. Ovarian cysts
16. Pelvic pain
17. Polycystic Ovarian Syndrome (PCOS)
18. Premenstrual syndrome (PMS)

19. Urinary tract infection

20. Vulvodynia

We excluded contraception because it cannot be recognized as a disease. At the same time, we analyzed the scientific evidence regarding the use of bee products for the above-named disease

conditions using PubMed and JUST find (data search engine of the Justus-Liebig-University Gießen, Germany, which comprises 337 databases from the EBSCO Discovery Service).

The analyses of the contents of the books were documented in PSPP, a free statistical software application, intended as a free alternative for IBM SPSS Statistics. We used descriptive statistics.

## Results

Gynaecological problem	Number of mentions in books[n (%)]N = 135	Number of different treatment concepts	Methods suggested (Numbers of mentions if more than one)	Findings of the literature analysis (Reference number)
1. Abnormal uterine bleedings	10 (7.4)	10	Monotherapies: royal jelly, pollen, propolis, honey massage. Combination therapies: royal jelly + pollen + perga, royal jelly + pollen + propolis, honey + royal jelly + propolis, echinacea + pollen, tea from shepherd's purse and common horsetail + honey	No evidence for treatment with bee products, treatment with bee venom may cause problem [9]
2. Breast lumps	1 (.7)	1	Combination therapy: Honey + propolis + propolis ointment	No evidence for treatment with bee products
3. Chlamydia	14 (10.4)	5	Monotherapies: propolis [11], propolis intravaginally, honey Combination therapies: acupuncture + acupressure + bee ointment, bee venom ointment acupressure + propolis + royal jelly + apilarnil + pollen + honey	No evidence for treatment with bee products
4. Condylomata/dysplasia (Papillomaviruses)	23 (17.0)	6	Monotherapies: propolis [14], propolis ointment [3], honey [3], royal jelly Combination therapies: honey + cod liver oil, honey + propolis + royal jelly + propolis ointment	Propolis [10]
5. Decreased libido	9 (6.7)	5	Monotherapies: royal jelly (4), honey (acacia and citrus) Combination therapies: royal jelly + hyaluronic acid, royal jelly + pollen, honey + herbs + royal jelly [2]	Mad honey [11,12]. However, mad honey is mainly used by men.
6. Dysmenorrhea	39 (28.8)	20	Monotherapies: royal jelly [5], honey [3], pollen, homeopathy Apis, bee venom acupuncture, royal jelly [2], honey massage, propolis [3] Combination therapies: royal jelly + pollen + perga [3], tea from lady's mantle + marjoram + honey, royal jelly + honey + pollen [3], royal jelly + pollen + propolis [2], royal jelly + pollen [6], royal jelly + honey [2], pollen + melbrosia, pollen + perga + royal jelly, royal jelly + propolis [2], propolis + honey, oxymel + additives, royal jelly + pollen + perga + honey + aromiel (chestnut honey with essential oils, here sage, chamomile and cypress oil), royal jelly + aromiel, pollen + perga + aromiel (honey with essential oils, here thyme honey with marjoram, rosemary and peppermint oil),	Honey, royal jelly [5]
7. Dyspareunia	1 (.7)	1	Combination therapy: propolis, honey, pollen	No evidence for treatment with bee products
8. Endometriosis			No treatments suggested	Honey and propolis containing chrysin - in vitro data [13]
9. Gonorrhoea and vaginitis	7 (5.2)	5	Monotherapies: propolis [3], honey massage Combination therapies: propolis + honey + royal jelly + apilarnil + ointment with propolis and bee venom, honey intravaginally + propolis + hip bath, propolis + marjoram oil + myrtle oil	Honey for vulvovaginal candidiasis [14]; propolis for chronic vaginitis [10].
10. Incontinence (urinary)	2 (1.5)	1	Monotherapy: royal jelly [2]	Skin protectant containing manuka honey for moisture-associated skin damage [15]; cytoplasmic extracts of pollen, pumpkin seed extract and vitamin E [16]; xyloglucan-gelose-hibiscus-propolis [17]
11. Infertility	9 (6.7)	7	Monotherapies: royal jelly [3], honey Combination therapies: pollen + royal jelly, royal jelly + bee venom, royal jelly + honey (heather) + oil from cypresses and sage, honey and royal jelly intravaginally, honey + pollen + royal jelly + whole foods	Vaginal natural product based on honey and 1% extract of <i>Myristica fragrans</i> improves the success of intrauterine insemination [18]; experimental data show that royal jelly promotes ovarian follicles growth and increases steroid hormones [19]
12. Lichen sclerosus	3 (2.2)	1	Two unspecific mentions Combination therapies: mix of propolis and pollen or honey	No evidence for treatment with bee products

13. Menopausal complaints	40 (28.6)	24	Monotherapies: royal jelly [8], pollen [5], propolis [2], honey, oxymel Combination therapies: pollen + royal jelly [4], honey and pollen, honey and royal jelly, perga + pollen, tea + honey, honey + propolis + pollen + aromiel, honey + propolis + pollen + royal jelly + bee venom + apilarnil, bee venom ointment + propolis ointment, honey + propolis + pollen + royal jelly + apilarnil + bee venom ointment + chewing wax, honey + pollen + royal jelly ointment, honey + pollen + royal jelly, honey + pollen + royal jelly + tea, propolis + propolis ointment + royal jelly ointment, propolis + pollen + royal jelly, propolis + royal jelly + baths with honey, royal jelly and rose oil, propolis + royal jelly + tea, pollen + perga + royal jelly + ginseng, pollen + royal jelly + aromiel, pollen + royal jelly + acupuncture, mix of honey and pollen + bee venom massage + bee venom acupuncture, pollen + perga + royal jelly	Royal jelly, pollen [6]
14. Osteoporosis	15 (11.1)	7	Two unspecific mentions Monotherapies: honey [4], royal jelly [3], pollen Combination therapies: propolis from dalbergia, honey + pollen, oxymel + calcium, royal jelly + pollen + perga [2]	Honey, royal jelly, pollen, propolis - <i>in-vitro</i> data [20-22]
15. Ovarian cysts			No treatments suggested	No evidence for treatment with bee products
16. Pelvic pain			No treatments suggested	No evidence for treatment with bee products
17. Premenstrual syndrome	9 (6.7)	5	Monotherapies: royal jelly (3) Combination therapies: pollen + perga + royal jelly (3), royal jelly + evening primrose oil, honey (heather) + oil from cypresses and sage + royal jelly, herbal tea + propolis	Royal Jelly, pollen [23,24]
18. Polycystic ovary syndrome	1 (.7)	1	Monotherapy: apilarnil	Bee venom - <i>in vitro</i> data [25], royal jelly - experimental data [26]
19. Urinary tract infection	24 (17.8)	16	Monotherapies: propolis (8), royal jelly, honey Combination therapies: honey + propolis + cranberry + herbs (2), tea from dead bees + honey + propolis, tea from acorns and chestnuts + propolis + pollen + red wine, honey (heather and eucalyptus) + cranberry, honey + propolis + royal jelly + pollen + perga + propolis massage, honey and propolis locally, herbal tea + propolis + honey, hip bath + honey + herbal tea + propolis, honey (manuka) + green tea, propolis + honey + pollen + propolis on tampon, propolis + intraurethral instillation of honey and propolis, cinnamon and honey in warm water, onions + white wine + honey (eucalyptus)	Propolis and cranberry [27].
20. Vulvodynia			No treatments suggested	No treatment with bee products

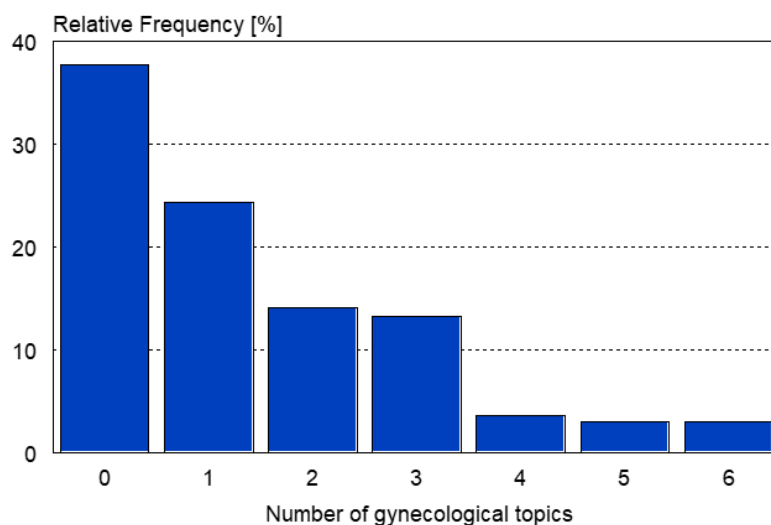


Figure 1: Number of the various gynaecological topics in the various apitherapy books.

Our first analysis assessed the number of topics which are dealt with in the books. Figure 1 shows that fifty-one books (37.8%) did not cover any gynaecological topics at all. Four books (3.0%) covered 6 topics; four books covered only 5 topics and five other books (3.7%) only four topics. Further details are depicted in Figure 1. The mean number of topics covered is 1.4 (median 1 topic). Some topics were intensively covered like climacteric complaints (40 times), dysmenorrhea (39 times), urinary tract infections (24 times), condyloma and herpes virus infections (23 times), vaginal infections (21 times), osteoporosis (15 times) and abnormal uterine bleedings (10 times) (Table 1). Endometriosis, ovarian cysts, pelvic pain and vulvodynia were not mentioned in any book. We also found significant variations regarding the treatment recommendations indicating that there is no consensus on the best treatment (Table 1).

A comparison of the methods suggested by apitherapists and scientific evidence shows that there is no scientific evidence for the apitherapy endorsed treatment of abnormal uterine bleedings, breast lumps, chlamydia, dyspareunia, infertility, ovarian cysts, pelvic pain, and vulvodynia. And in the case of abnormal uterine bleedings there is evidence against the use of bee venom. Regarding endometriosis, lichen sclerosis, and polycystic ovary syndrome there is only preclinical evidence. Interesting though, is that endometriosis is the only disease condition that was not mentioned by apitherapists for which there is some in-vitro evidence. Concerning decreased libido, the types of honey recommended by apitherapists differ from those which have been found to be effective and in the case of the polycystic ovary syndrome; the bee products which have shown efficacy in preclinical studies (bee venom, royal jelly) are not mentioned. With respect to many other disease conditions, the multitude of recommendations also includes methods with evidence. The widest spectrum of recommendations can be found for abnormal uterine bleedings and infertility.

## Discussion

This analysis shows that gynaecological topics are not well represented in the apitherapeutic literature. Even though this analysis only focused on the 20 most relevant topics of gynaecology, the coverage of these topics in apitherapeutic books is extremely low (maximum 6). Furthermore, even when all the available information from the apitherapeutic books is gathered, it is not sufficient when considering the most important fields of gynaecology, especially when important topics like endometriosis, ovarian cysts, pelvic pain and vulvodynia are not covered.

To the best of our knowledge, this is the first analysis on the question if and to what extent can methods from the field of apitherapy be alternatives to conventional ones. So far, there has been only a summary on dermatological problems which can be treated with apitherapeutic methods [28].

Apart from the low coverage of gynaecological topics in apitherapy books another problem would be to decide which

treatments should be recommended. Looking at the multitude of recommendations, decisions must be made. This could be easy with respect to condylomas and genital dysplasia where there is a clear majority for the treatment with propolis or for breast lumps where there is only one option to choose from. However, in the case of abnormal uterine bleedings there are 10 books, each recommending a different concept.

The next question should be the evidence behind the recommendations. As shown, only the recommendation for the treatment of Human-Papilloma-Virus-associated problems can be considered reasonable. Here, about 74 % (17/23) of the recommendations were correct. Some recommendations regarding urinary tract infections must be considered correct too. This clearly contrasts with almost all the other indications suggesting that there is no scientific background for the recommendations. This fact has been shown for several other health problems; however, the current analysis demonstrates that holistic apitherapy as it is widely promoted via books and the internet, offers a multitude of different apitherapeutic approaches of which only a minority are supported by clinical evidence [2-6]. Therefore, it would be interesting to determine the basis for the recommendations. Another interesting question is if an analysis conducted in other fields of medicine would have come to a different conclusion.

The next problem would be whether it would be wise to recommend apitherapy to patients who ask for natural or alternative treatments in all cases. As shown in an example on primary dysmenorrhea, apitherapy is not always the first choice. With respect to the evidence, royal jelly and honey cannot be considered to be the best options. These would be (1) local heat applications, (2) exercise, (3) aromatherapy with lavender oil or lavender oil massage or (4) vitamin B1, (5) omega-3 fatty acids, (6) acupuncture, (7) ginger, and (8) chaste berry must be considered better options if it comes to simplicity, safety, costs and availability (5). Furthermore, it must be considered that apitherapy is not always attractive to patients. When asked about their therapeutic preferences regarding primary dysmenorrhea, patients answered that they would prefer pain relievers and contraceptive pills from conventional medicine as well as homoeopathy, order therapy, local heat applications and diet recommendations from complementary and alternative medicine. Honey and royal jelly are among the least appealing/attractive methods [29]. Thus, it must also be recognized that many bee products are not very appealing to patients. This especially refers to live bee stings but, apart from honey and propolis, the acceptance of all bee products is very poor [30,31].

Taking together the available information on apitherapy as a potential option to replace conventional medicine in the field of gynaecology it can be summarized that the claims of apitherapists are not justified in many cases because

1. There are no apitherapeutic concepts for several relevant topics.

2. There is no common doctrine with respect to apitherapeutic concepts for various diseases.
3. Apitherapy is not always the best choice with respect to clinical evidence.
4. The acceptance of various apitherapeutic treatments is not very high.

If apitherapy wants to overcome the referred problems it would be reasonable that comprehensive treatment concepts are presented. Many of the concepts presented by apitherapists appear arbitrary. It seems advisable that instead of claiming that apitherapy could replace other types of medicine, its protagonists should focus on individual recommendations with scientific evidence. Examples for a very reasonable use of apitherapy are treatment of various types of wounds with honey (wound infections, tonsillectomy, diabetic foot ulcers, radiotherapy and/or chemotherapy induced oral mucositis, burns), treatment of Herpes virus associated skin lesions (HSV-1, HSV-2) with propolis, honey for acute coughs in children, propolis for oral health (dental plaque and gingival inflammation), bee venom for post-stroke shoulder pain and musculoskeletal pain [32-39]. The clinical evidence for these problems is supported by the results of systematic reviews and meta-analyses. In these indications bee products often surpass other therapeutic options. In the view of the authors, apitherapists should focus on evidence and explore further reasonable applications without promoting them until there is sufficient evidence. This will improve credibility of apitherapy and could lead to integrative approaches from which patients could benefit.

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## Conflict of Interest

Authors declare no conflict of interest.

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