Citation/Atıf: Rajamanoharan PRS, Vivekanandarajah - Sathasivampillai SV, 2021. The Role of Honey in Pediatric Treatments in Sri Lankan Siddha Medicine (Sri Lanka Siddha Medicine'de Pediatrik Tedavilerde Balın Rolü). U. Arı D./U. Bee J. 21: 83-90, DOI: 10.31467/uluaricilik.851567

DERLEME / REVIEW

THE ROLE OF HONEY IN PEDIATRIC TREATMENTS IN SRI LANKAN SIDDHA MEDICINE

Sri Lanka Siddha Medicine'de Pediatrik Tedavilerde Balın Rolü

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Geliş Tarihi / Received: 31.12.2020 Kabul Tarihi / Accepted:05.02.2021 DOI: 10.31467/uluaricilik.851567

ABSTRACT

Honey is used as food and for the treatment of indigenous medicines worldwide, also in Sri Lanka for a long time. Siddha Medicine is one of the four indigenous medicines currently practiced in Sri Lanka and is generally practiced in the Eastern and Northern Provinces of Sri Lanka. This study aims to explore and highlight the use of honey in pediatric treatments in Sri Lankan Siddha Medicine. Preparations used to treat pediatric disorders were obtained from standard Sri Lankan textbooks used in Siddha Medicine degree programs at universities in Sri Lanka [Pararasaseharam (Part Two) and Seharasasehara Treatment]. A total of 30 preparations were identified using honey as an ingredient or adjuvant. Honey is generally used to treat indigestion and disorders associated with the digestive system. This is the first study on the role of honey in pediatric treatments in Sri Lankan Siddha Medicine. This work identified, analyzed, and documented the use of honey in pediatric treatments in Sri Lankan Siddha Medicine.

Keywords: ***Sri Lanka, Siddha Medicine, honey, pediatric treatments***

ÖZ

Bal, gıda olarak ve dünya çapında yerli ilaçların tedavisinde ve ayrıca Sri Lanka'da uzun süredir kullanılmaktadır. Siddha Medicine şu anda Sri Lanka'da uygulanmakta olan dört yerli ilaçtan biridir ve genellikle Sri Lanka'nın Doğu ve Kuzey İllerinde uygulanmaktadır. Bu çalışma, Sri Lanka Siddha Medicine'de pediatrik tedavilerde balın kullanımını araştırmayı ve vurgulamayı amaçlamaktadır. Pediyatrik bozuklukları tedavi etmek için kullanılan hazırlıklar, Sri Lanka'daki [Pararasaseharam (İkinci Kısım) ve Seharasasehara Tedavisi] üniversitelerindeki Siddha Tıp derecesi programlarında kullanılan standart Sri Lanka ders kitaplarından elde edildi. Bir bileşen veya yardımcı madde olarak bal kullanılarak toplam 30 preparat tanımlandı. Bal genellikle hazımsızlık ve sindirim sistemi ile ilgili rahatsızlıkları tedavi etmek için kullanılır. Bu, Sri Lanka Siddha Medicine'de balın pediatrik tedavilerdeki rolü üzerine yapılan ilk çalışmadır. Bu çalışmada, Sri Lanka Siddha Medicine'de pediatrik tedavilerde balın kullanımını belirlendi, analiz edildi ve belgelendi.

Anahtar Kelimeler: ***Sri Lanka, Siddha Medicine, bal, pediatrik tedaviler***

GENIŞLETILMIŞ ÖZET

Amaçlar ve Hedefler: Bu çalışma, Sri Lanka Siddha Medicine'de pediatrik tedavilerde balın kullanımını araştırmayı ve vurgulamayı amaçlamaktadır. Ayrıca, bu sistematik inceleme, Sri Lanka balıyla ilgili gelecekteki farmakolojik araştırmalar için faydalı olacaktır.

Balın tedavideki rolü: Sri Lankan Siddha Medicine pediatrik tedavilerinde balın müstahzar adı, tedavisi, ilacın türü, yardımcı ve referansı dahil bilgiler Tablo 1'de listelenmiştir. Çeşitli pediatrik bozukluklar için toplam 72 preparat iki kaynakta da listelenmiştir: (Ponniahpilai 2016, Ponniahpilai 2000). Ancak bal, 72 preparatın 30'unda bir bileşen veya yardımcı madde olarak kullanılmaktadır. Ayrıca, bal belirli bir preparatta bir bileşen olarak kullanılırsa, bu preparasyonda bir adjuvan olarak kullanılmaz ve bunun tersi de geçerlidir. Dolayısıyla bu, müstahzarlarda kullanılan diğer maddelerle karşılaştırıldığında, balın temel olarak pediatrik tedavilerde kullanılan tek madde olduğunu göstermektedir. Bu nedenle, bu bilgiler balın Sri Lanka Siddha Medicine'de pediatrik tedavilerde yer alan en önemli madde olduğunu ortaya koymaktadır. Tedavilerin çoğu (16 preparat ve adjuvan) Ponniahpillai'de (2016), ardından Ponniahpillai'de (2000) tanımlanmıştır.

Ayrıca bal, çoğunlukla pediyatrik tedavilerde yardımcı madde olarak kullanılmaktadır. Öncelikle toz preparatlarla bir adjuvan olarak ve ardından haplar olarak kullanılır. Buna ek olarak, bal genellikle tonik ve kaynatmada bir bileşen olarak kullanılır, ardından pediatrik tedavilerde haplar ve tozlar gelir. Bal genellikle pediatrik bozukluklarda hazımsızlık, ishal, kızarıklık, ateş ve öksürüğü tedavi etmek için kullanılır. İnsan vücudu sistemleri açısından, genellikle sindirim, solunum, deri, iskelet, kas, sinir ve kardiyovasküler sistemlerle ilişkili bozuklukları tedavi etmek için kullanılır. Yukarıda bahsedildiği gibi, balın anti-enflamatuar, antibakteriyel, yara iyileştirme ve antifungal aktivite çalışmaları, eklem hastalığı, kızarıklık ve öksürük dahil olmak üzere Sri Lanka Siddha Tıbbında pediatrik tedavilerde kullanımına dair bilimsel kanıt sağlar. Modern tıpta pediatrik tedavide balın kullanıldığı birçok klinik araştırma mevcuttur. Bu çalışmalar, balın Siddha tıbbı da dahil olmak üzere geleneksel ilaçlar üzerindeki iyileştirici etkilerinin bilimsel kanıtlarını sağlar. Örneğin, pediyatrik klinik çalışmalar öksürük, yaralar, solunum yolu enfeksiyonları, bacaklarda kronik venöz ülserler, iltihaplı, hasarlı cilt, herpes, gastroenterit, yetersiz beslenme, yanıklar, mukozit, dehidratasyon ve diş çekimi yaralarının iyileştirici etkilerini göstermiştir (Abdel-Naby Awad ve Hamad, 2018, Abdulrhman v.d. 2011, Abdulrhman v.d. 2010, Aly v.d. 2017, Haffejee ve Moosa, 1985, Konuk Sener ve diğerleri 2019, Mokhtari v.d. 2019, Paul, 2012, Shaaban v.d. 2010, Shadkam v.d. 2010, Simon v.d. 2006).

Sonuç: Bu, Sri Lanka Siddha Medicine'de balın pediatrik tedavilerdeki rolü üzerine yapılan ilk çalışmadır. Bal, Sri Lanka Siddha Medicine'de pediatrik tedavilerde hayati bir rol oynar. Ancak bu preparatlarla bilimsel kanıt sağlamak için herhangi bir çalışma yapılmamıştır. Bu nedenle, bilimsel kanıtların yanı sıra güvenlik ve etkililik amaçları sağlamak için daha fazla in vitro, in vivo ve klinik deneyler yapılmalıdır. Bu çalışmada, Sri Lanka Siddha Medicine'de pediatrik tedavilerde balın kullanımını belirlendi, analiz edildi ve belgelendi. Ek olarak, bu çalışma, Sri Lanka Siddha Tıbbında pediatrik tedavilerde bal içeren preparatlar ve yardımcıların daha ileri farmakolojik çalışmaları için temel sağlar.

INTRODUCTION

In Sri Lanka, 132 bee species belonging to four families (*Apidae, Megachilidae, Halictidae*, and *Colletidae*) were documented (Wijesekara 2001). Sri Lanka hosts three species of bees: *Apis dorsata* Fabricius (sourced in the district of Matale), *Apis florea* Fabricius (sourced in the districts of Kandy, Puttalam, Matale, Matara, and Trincomalee), and *Apis cerana* Fabricius (sourced in the districts of Badulla and Galle) (Punchihewa 1994, Wijesekara 2001). Honey is used as food and medicine in indigenous medicines globally also, in Sri Lanka for a long time. The taste of honey varies depending on the types of flowers from which nectar is collected. Plants of families such as *Asteraceae, Fabaceae* (*Mimosa pudica* L.; *Vachellia leucophloea* (Roxb.) Maslin, Seigler & Ebinger; *Tephrosia purpurea* (L.) Pers.; *Gliricidia sepium* (Jacq.) Steud.; *Acacia auriculiformis* A.Cunn. ex Benth.; and *Cassia fistula* L.), *Asteraceae* (*Tithonia diversifolia* (Hemsl.) A.Gray; *Wollastonia biflora* (L.) DC.; and *Sphagneticola trilobata* (L.) Pruski), *Myrtaceae* (*Eucalyptus camaldulensis* Dehnh.), *Acanthaceae* (*Strobilanthes lupulina* Nees), *Malvaceae*, and

Poaceae are the primary sources of pollen and nectar for honeybees in Sri Lanka (Silva et al., 2018).

Honey consists mainly of water and sugars such as fructose, glucose, and sucrose. It also contains folate, niacin, pantothenic acid, riboflavin, vitamin C, pyridoxine, proteins, minerals, pinocembrin, hesperetin, quercetin, chrysin, apigenin, galangin, kaempferol, ellagic acid, ferulic acid, p-coumaric acid, and caffeic acid (Allsop and Miller 1996, Eteraf-Oskouei and Najafi 2013, Zumla and Lulat 1989). Scientific studies have revealed that honey includes anti-inflammatory, antioxidant, wound healing, antidiabetic, antibacterial, and antifungal activities (Aljadi and Kamaruddin 2004, Al-Mamary et al. 2002, Al-Waili 2005, 2004, 2003, Al-Waili and Boni 2003, Asadi-Pooya et al. 2003, Bansal et al. 2005, Beretta et al. 2005, Bilsel et al. 2002, Blasa et al. 2006, Brady et al. 1996, Chepulis 2007, Chua et al. 2013, Efem 1988, Frankel et al. 1998, Gheldof and Engeseth 2002, Jeffrey and Echazarreta 1996, Meda et al. 2004, Molan 1999, Obaseiki-Ebor and Afonya 1984, Olaitan et al. 2007, Schramm et al. 2003, Shimazawa et al. 2005, Yaghoobi et al. 2008).

Siddha Medicine is one of the four indigenous medicines currently practiced in Sri Lanka and is commonly practiced in the Eastern and Northern Provinces of Sri Lanka (Weragoda 1980). Siddha Medicine originated in South India in the time from 10,000 to 4,000 B.C. (Siddha National Institute, 2016). A total of 4,448 diseases have been listed in Siddha Medicine (Government of Kerala, 2011). The treatments offered in Siddha Medicine are individual and are based on age, sex, physical state, diet, lifestyle, environment, habitat, habits, patient, physiological structure, weather, mental state, and appetite (Ministry of Ayurveda, Yoga, and Naturopathy, Unani, Siddha, and Homoeopathy, 2017). The raw materials used for Siddha medicinal preparations come from plants, animals, metals, minerals, and marine organisms. In addition to these types of raw materials, honey is also widely used in a variety of preparations in Siddha Medicine (Siddha National Institute, 2016). Seven types of honey are used in Siddha medicinal preparations, including hill honey, tree branch honey, tree hole honey, anthill honey, domestic honey, fresh honey, and old honey (Parasuraman and Perumal, 2020).

This study aims to explore and highlight the use of honey in pediatric treatments in Sri Lankan Siddha Medicine. Furthermore, this systematic review would be useful for future pharmacological research on Sri Lankan honey.

Preparations used for the treatment of pediatric disorders obtained from the Sri Lankan standard university textbooks used in Siddha Medicine degree programs in Sri Lanka: Pararasaseharam (Part Two) [Pararaasasharam (Irendaam Paaham)] (Ponniahpilai 2016) and Seharaasashahara Treatment [Seharaasashahara Vaithththiyam] (Ponniahpilai 2000). Only preparations involving honey as an ingredient or adjuvant taken into account in this study.

The role of honey in treatments

The information, including the name of the preparation, treatment for, type of medication, preparation/adjuvant, and reference of the use of honey in Sri Lankan Siddha Medicine pediatric treatments are listed in Table 1. A total of 72 preparations for various pediatric disorders are listed in both sources: Ponniahpilai (2016) and Ponniahpilai (2000). However, honey is used as an ingredient or adjuvant in 30 of the 72 preparations. Also, if honey is used as an ingredient in a particular preparation, then it is not used as an adjuvant with that preparation, and vice versa. Hence, this shows that honey is the only substance mainly used in pediatric treatments, compared to other substances used in the preparations. Therefore, this information reveals that honey is the most important substance involved in pediatric treatments in Sri Lankan Siddha Medicine. Most of the treatments (16 preparations and adjuvants) were identified in Ponniahpillai (2016), followed by Ponniahpillai (2000).

Table 1: Use of honey in pediatric treatments

Tablo 1: Pediatrik tedavilerde bal kullanımı

Name of preparation	Treatment for	Type of medication	Preparation / adjuvant	Reference
Akkarahaara Sanjeevi Maaththirai	Fever	Pill	Adjuvant	P
Akkarahaara Kulihai	Diarrhea, fever, coma	Pill	Adjuvant	P
Athisaara Piththath Thool	Dysentery	Powder	Adjuvant	S
Iraththa Piththam	Blood disorders	Powder	Adjuvant	S
Uraththa Piththa Vaathath Thool	Indigestion, joint disorders	Powder	Adjuvant	S
Elaathi Maaththirai	Fever, indigestion	Pill	Adjuvant	P
Ongaalaththuk Kasaayam	Nausea, vomiting	Decoction	Preparation	P
Karappaan Patrpam	Skin rashes	Powder	Adjuvant	S
Karappaan Piththath Thool	Skin lesion	Powder	Adjuvant	S
Kasththoorimiruththiyaathi Maaththirai	Cough	Pill	Adjuvant	P
Kiranthi Vaathath Thool	Joint diseases, skin rashes	Powder	Adjuvant	S
Kumaran Velkanda Ilehiyam	Cough, vomit	Tonic	Preparation	S
Koolppaada Ilehiyam	Cough	Tonic	Preparation	S
Sayapiththath Thool	Tuberculosis, indigestion	Powder	Adjuvant	S
Sittramattik Kulihai	Indigestion	Pill	Adjuvant	P
Suravikkatrool	Fever, hiccough	Powder	Adjuvant	S
Suwarkkakkorosanai Maaththirai	Fever, indigestion, diarrhea	Pill	Adjuvant	P
Suwasa Piththath Thool	Respiratory disorders	Powder	Adjuvant	S
Suwasaththitrku Enaathik Kulihai	Asthma	Pill	Preparation	S
Neermaanthath Thool	Indigestion	Powder	Preparation	P
Paravaichchsuraththitrkuk Kasaayam	Fever	Decoction	Preparation	P
Perungaayak kulihai 1	Indigestion, diarrhea, fever, cough	Pill	Adjuvant	P
Perungaayak kulihai 2	Indigestion, diarrhea	Pill	Adjuvant	P
Paanthasannikkuk kulihai	Indigestion, coma	Pill	Adjuvant	P
Miruththiyaathik Kulihai	Indigestion, fever	Pill	Adjuvant	P
Vaathapatrpath Thool	Joint diseases	Powder	Adjuvant	S
Vaayvu Vikkatrool	Hiccough	Powder	Adjuvant	S
Vikkat Silettumath Thool	Hiccough	Powder	Adjuvant	S
Virana Piththath Thool	Wounds	Powder	Adjuvant	S
Venkaayak Kulihai	Abdominal distension, indigestion, diarrhea	Pill	Adjuvant	P

Abbreviations: P: (Ponniahpillai, 2016); S: (Ponniahpillai, 2000)

Kısaltmalar: P: (Ponniahpillai, 2016); S: (Ponniahpillai, 2000)

In addition, honey is mainly used as an adjuvant in pediatric treatments. It is used primarily as an adjuvant with powdered preparations followed by pills. In addition, honey is often used as an ingredient in tonic and decoction, followed by pills and powders in pediatric treatments. Honey is usually used to treat indigestion, diarrheic, rash, fever, and cough in pediatric disorders. In terms of human body systems, it is generally used to treat digestive, respiratory, integumentary, skeletal, muscular, nervous, and cardiovascular systems-associated disorders. As mentioned above, anti-inflammatory, antibacterial, wound healing, and antifungal activity studies of honey provide scientific evidence of its use in pediatric treatments in Sri Lankan Siddha Medicine, including joint disease, rash, and cough. There are several clinical trials available using honey in pediatric treatment in modern medicine. These studies provide scientific evidence of the healing effects of honey on traditional medicines, including Siddha medicine. For example, pediatric clinical studies have shown healing effects of cough, wounds, respiratory infections, chronic venous ulcers of the legs, inflammatory, damaged skin, herpes, gastroenteritis, malnutrition, burns, mucositis, dehydration, and tooth extraction wounds (Abdel-Naby Awad and Hamad, 2018, Abdulrhman et al. 2011, 2010, Aly et al. 201, Haffejee and Moosa, 1985, Konuk Sener et al. 2019, Mokhtari et al. 2019, Paul, 2012, Shaaban et al. 2010, Shadkam et al., 2010, 2010, Simon et al. 2006).

This is the first study on the role of honey in pediatric treatments in Sri Lankan Siddha Medicine. Honey plays a vital role in pediatric treatments in Sri Lankan Siddha Medicine. However, no study has been conducted to provide scientific evidence with these preparations. Therefore, further in vitro, in vivo, and clinical trials should be conducted to provide scientific evidence as well as safety and efficacy purposes. This work identified, analyzed, and documented the use of honey in pediatric treatments in Sri Lankan Siddha Medicine. In addition, this work provides the basis for further pharmacological studies of preparations and adjuvants that involve honey in pediatric treatments in Sri Lankan Siddha Medicine.

Source of Finance

This work received no funding.

Contributions of all Authors

Both authors contributed equally.

Conflict of Interest

The authors declared that there is no conflict of interest in this study.

Acknowledgement

The authors are thankful to their family members for their vital support to complete this work.

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