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A Critical Appraisal of Madhu-Ghṛta Prashana from Ayurvedic Texts in the Context of Physiological Juandice

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ABSTRACT

Introduction: Neonatal hyperbilirubinemia is a common clinical condition encountered during the neonatal period, particularly in the first week of life. It is estimated that approximately 8% to 11% of neonates develop some degree of hyperbilirubinemia. Elevated bilirubin levels, if not properly managed, can be toxic to the central nervous system (CNS) and may result in long-term neurological impairments, such as kernicterus.The most prevalent form is physiological jaundice, which arises due to the immaturity of the liver and other physiological systems involved in bilirubin metabolism and excretion. While typically self-limiting, early intervention is essential in preventing complications.

In traditional Ayurvedic literature, various newborn care practices are described under the term *Jatakarma Samskaras*, a series of rituals and health-promoting procedures performed immediately after birth. One such practice is *Madhu-Ghrita Prashana*—the administration of a small quantity of honey and clarified butter (ghee) to the newborn. This paper aims to explore the scientific basis for this traditional practice and evaluate its potential role in supporting neonatal liver function and possibly reducing the severity or early onset of physiological jaundice.

Materials and Methods: The literary review done from the various classical Ayurvedic literatures and paediatric textbooks. Critical review also done from articles published in various journals.

Results and Discussion: Though physiological jaundice doesn't have any serious consequences; it can create concern in the physician and anxiety in the parents. *Madhu* and *grta prashana* mentioned in neonatal care suggest an early initiation of feeding along with ensuring a coordinated sucking and swallowing reflex in the newborn. Apart from these benefits it also can help in addressing various physiological immaturities leading to the development of physiological jaundice in a neonate.

Conclusion: Samskaras are series of rituals performed at different stages of human life. These rituals performed possess some socio -cultural as well as some scientific rational behind it. *Jatakarma samskaras* helps the newborn to adapt to the new environment for further survival. The physiological handicaps of a newborn can be improved by the *madhu* and *grta prashana* thereby preventing the rise of bilirubin to a major extent.

Keywords: *Neonatal hyperbilirubinemia, Physiological jaundice, jatakarma samskaras, madhu grta prashana.*

1. INTRODUCTION

Neonatal jaundice is a yellowish discoloration of the skin, sclera, and mucous membranes in newborns due to elevated levels of bilirubin in the blood, a condition known as hyperbilirubinemia. It is one of the most common clinical conditions observed in neonates, affecting nearly 60% of term and 80% of preterm infants within the first week of life.[1]

In newborns, several physiological factors contribute to increased bilirubin production and decreased elimination. These include a higher red blood cell turnover, immature liver enzyme systems (particularly UDP-glucuronosyltransferase), and reduced hepatic uptake and conjugation of bilirubin. This leads to the accumulation of unconjugated (indirect) bilirubin in the blood, resulting in visible jaundice.[2]

While mild to moderate levels of bilirubin are usually harmless and resolve spontaneously as the liver matures, significantly elevated levels can cross the blood-brain barrier, particularly in preterm infants or those with compromised health, leading to bilirubin-induced neurological dysfunction (BIND) or kernicterus, a form of irreversible brain damage.

Physiological jaundice is the most common form of neonatal hyperbilirubinemia. It typically arises due to the physiological immaturity of bilirubin metabolism, usually manifesting between 24 to 72 hours after birth. In term neonates, bilirubin levels peak around the 4th to 5th day of life, while in preterm infants, the peak occurs around the 7th day. The condition generally resolves by the 10th to 14th day, with serum bilirubin levels usually remaining below 15 mg/dL.[1]

In Ayurveda, various *samskaras* are described for different stages of life to monitor and support appropriate developmental milestones. During infancy, practices such as immunity enhancement and establishing proper feeding routines are guided by the *Jatakarma Samskara*. A key component of this is *Madhu-Ghrita Prashana*—the administration of honey and ghee. [3]This review attempts to present a scientific rationale for the use of *Madhu-Ghrita Prashana* in neonates, concluding that its intake may provide multiple health benefits at various physiological levels

2. OBJECTIVES

To explore the concept and traditional significance of *Madhu-Ghṛta Prashana* as described in classical Ayurvedic literature, particularly within the context of management of physiological jaundice.

3. MATERIAL AND METHODS

This study is a narrative literature review aimed at critically appraising the concept of *Madhu-Ghṛta Prashana* from Ayurvedic texts in relation to management of physiological jaundice. Classical Ayurvedic sources including *Charaka Saṃhitā*, *Aṣṭāṅga Hṛdaya*, etc were examined for descriptions of *Jātakarma Saṃskāra* and the use of *madhu* (honey) and *ghṛta* (ghee) in neonates. Contemporary scientific literature from databases such as PubMed, Google Scholar, and AYUSH Research Portal was reviewed to explore the pharmacological properties of honey and ghee, with a focus on hepatoprotective, immunomodulatory, and digestive effects. Relevant Ayurvedic interpretations were correlated with modern biomedical understanding of neonatal jaundice. Articles included were peer-reviewed, published in English, and relevant to neonatal health and integrative medicine.

4. RESULTS AND DISCUSSION

Madhu-Ghrita Prashana in Ayurvedic Texts

The administration of honey (*madhu*) and clarified butter (*ghrita*) is an important component of the Jatakarma Samskara as described in classical Ayurvedic literature. This ritual is traditionally performed shortly after birth and is intended to promote health, intelligence, and vitality in the newborn.

According to authoritative Ayurvedic texts like the *Charaka Samhita*, *Sushruta Samhita*, and *Kashyapa Samhita*, the newborn should be given a small quantity of a mixture consisting of honey and ghee in equal parts, sometimes with the addition of herbs such as vacha (Acorus calamus) or gold bhasma (swarna bhasma), depending on regional traditions and family practices. This mixture is to be administered using a clean gold rod or the tip of a finger, immediately after birth, before the infant is breastfed.

While this ritual has deep cultural and spiritual significance, its ingredients also invite interest from a biomedical perspective. Honey, known for its natural antioxidants and antimicrobial properties, and ghee, a source of essential fatty acids and fat-soluble vitamins, may contribute in subtle ways to early metabolic and immune development.

Normal bilirubin metabolism[4]

Normal bilirubin metabolism can be summarized as a series of steps, including

(1) production

(2) uptake by the hepatocyte

(3) conjugation

(4) excretion into bile ducts and

(5) delivery to the intestine.

Jaundice can result from defects in any of these steps of bilirubin metabolism.

Physiological jaundice

Physiological jaundice accounts for 75% of neonatal hyperbilirubinemia and results from a physiological alteration in neonatal bilirubin metabolism. Approximately 60% of term and 80% of preterm newborns develop clinical jaundice in the first week after birth. In most cases, it is a mild, transient, and self-limiting condition and resolves without treatment. [5] Though physiological jaundice doesn't have any serious consequences; it can create concern in the physician and anxiety in the parents

Mechanisms involved in physiological jaundice include[6]:

- Shorter life span of fetal red blood cells being approximately 80 to 90 days in a full term infant, compared to 100 to 120 days in adults.
- Relatively low concentration of hepatic ligandin which serves as a driving force for initial hepatic uptake by binding bilirubin and inhibiting the efflux of pigment back into plasma.
- Relatively low activity of the enzyme glucuronosyltransferase which normally converts unconjugated bilirubin to conjugated bilirubin that can be excreted into the gastrointestinal tract.
- Relatively low conversion of bilirubin to urobilinogen by the intestinal flora, resulting in relatively high absorption of bilirubin back into the circulation.

Probable mode of action of *Madhu* and *Grta prashana* in Physiological jaundice

The administration of *madhu* (honey) and *ghrita* (clarified butter/ghee) shortly after birth may help address several physiological immaturities commonly observed in neonates:

1.Activation of the Immune System

Honey contains pollen grains from various flowers, which can act as mild allergens and stimulate the newborn's immune response. The liver, an important immune organ housing both innate and adaptive immune cells, plays a crucial role in this immune activation. Madhu and ghrita may enhance the liver's metabolic activity, contributing to improved overall immune function in the newborn [7,8].

2.Increased Synthesis of Albumin and Ligandin Proteins: Liver immaturity in newborns results in relatively low levels of albumin and ligandin proteins. Upon activation, the liver increases the synthesis and release of these proteins. Albumin binds unconjugated bilirubin in the bloodstream for safe transport to the liver. Inside hepatocytes, bilirubin dissociates from albumin and binds to ligandin, which facilitates its transport to the smooth endoplasmic reticulum and prevents premature release of unconjugated bilirubin back into circulation [9,10]\

3.Activation of UDP-Glucuronyltransferase Enzyme

Before birth, UDP-glucuronyltransferase—the enzyme responsible for conjugating bilirubin—is downregulated to allow unconjugated bilirubin to cross the placenta. After birth, enzyme activity gradually increases, but this process takes time. Early intake of madhu and ghrita may help accelerate the activation of this enzyme, promoting the rapid conversion of toxic unconjugated bilirubin into its conjugated form within the smooth endoplasmic reticulum [11,12].

4.Increased Bile Secretion: The final step in hepatic excretion is the transport of conjugated bilirubin across the bile canaliculus and into the biliary system. The presence of fatty substances in the GI tract triggers the secretion of bile from liver for its digestion stimulating liver function. It can also result in rapid contraction of gall bladder and the release of stored bile containing conjugated bilirubin. The conjugated bilirubin in the biliary tree enters the gastrointestinal tract [13,14]

5. Stimulation of Intestinal Motility and Gut Flora: In the intestines, conjugated bilirubin is metabolized by bacterial enzymes into urobilinogens such as urobilinogen and stercobilinogen, which are eventually excreted in feces and urine. The initial feeding of madhu and ghrita may stimulate gastrointestinal motility and promote the growth of beneficial gut bacteria. This accelerates bilirubin conversion and reduces enterohepatic recycling. Enhanced gut motility also facilitates early passage of meconium, further preventing bilirubin reabsorption [15]

Some other benefits

- Since honey and ghee have a rich caloric value, it can act as an energy source to baby whose previous source of nutrition from placenta has stopped.

- Rooting and Sucking reflex as well as Sucking and Swallowing coordination is assessed while offering honey and ghee
- It also helps to rule out anomalies such as cleft palate, hare lips, fissured tongue etc.

5. CONCLUSION

Madhu-Ghṛta Prashana, as described in classical Ayurvedic texts, is a ritualistic and therapeutic intervention embedded within the broader framework of Jātakarma Saṃskāras. While its traditional intent emphasizes spiritual, cognitive, and physiological nourishment of the newborn, emerging biomedical perspectives suggest potential relevance in supporting neonatal hepatic function and bilirubin metabolism. The proposed mechanisms—including immune activation, stimulation of liver enzymes, enhanced bile secretion, and gut motility—offer a theoretical basis for its role in mitigating physiological jaundice.

However, despite these promising correlations, the practice must be approached with caution in modern clinical contexts, particularly due to safety concerns.There is a pressing need for well-designed scientific studies to evaluate the safety, dosage, and efficacy of this traditional intervention before it can be considered for integration into evidence-based neonatal care.

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