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Concept of *Shadbhava* in Fetal Development: An *Ayurvedic* Framework with Modern Embryological Interpretation

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Abstract

Background: Fetal development is a highly regulated and multifactorial biological process. *Ayurveda*, through the doctrine of *Shadbhāva Siddhānta*, describes six fundamental causative factors responsible for the formation, growth, differentiation, and individuality of the fetus (*Garbha*). These six *Bhāvas*—*Mātrja*, *Pitrja*, *Ātmāja*, *Rasaja*, *Sattvaja*, and *Satmyaja*—represent a holistic model encompassing physical, genetic, nutritional, psychological, environmental, and metaphysical determinants. Modern embryology also recognizes similar multifactorial influences such as parental genetic contribution, maternal nutrition, intrauterine environment, hormonal balance, epigenetic modulation, and psychosocial factors.

Aim: To critically analyze the concept of *Śadbhāva* in fetal development as described in classical *Ayurvedic* literature and to correlate these principles with contemporary scientific concepts of human embryology and developmental biology.

Materials and Methods: A comprehensive literary review was conducted using primary *Ayurvedic* texts including *Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Hridaya*, along with standard modern textbooks of embryology, anatomy, obstetrics, and developmental biology. Conceptual analysis and comparative interpretation were employed to establish correlations.

Results: Each component of *Śadbhāva*—*Mātrja*, *Pitrja*, *Ātmāja*, *Rasaja*, *Sattvaja*, and *Satmyaja Bhāva*—shows close resemblance to recognized scientific determinants such as maternal and paternal genetic contribution, nutrition, psychological status, epigenetics, and environmental adaptation.

Conclusion: *Śadbhāva Siddhānta* presents a comprehensive, integrative embryological doctrine. Its principles align substantially with modern scientific understanding, highlighting *Ayurveda's* advanced insight into fetal development and its relevance to contemporary maternal–fetal medicine.

Keywords: Ayurveda, Shadbhāva Siddhānta, Fetal Development, Embryology, and Epigenetics.

Introduction

The origin and development of human life have been subjects of inquiry since antiquity. In modern biomedical science, fetal development is understood as a sequence of events beginning with fertilization, followed by cleavage, implantation, organogenesis, and maturation, governed by genetic programming and environmental influences. Despite technological advances, contemporary science increasingly acknowledges that fetal growth is not solely genetic but also profoundly influenced by maternal nutrition, psychological state, endocrine balance, and environmental exposures.

Ayurveda offers a unique and holistic explanation of embryogenesis through the *Śadbhāva Siddhānta*, which states that the proper formation of the fetus requires six essential causative factors^[1]. These *Bhāvas* collectively determine not only physical structure but also physiological function, mental disposition, adaptability, and individuality of the offspring.

Unlike reductionist approaches, *Ayurveda* views fetal development as an integrated process involving body (*Śarīra*),

mind (*Manas*), and life principle (*Ātman*). This article explores *Śadbhāva* in detail and demonstrates its remarkable concordance with modern embryology.

Materials and Methods

Study Design

A narrative review and conceptual analytical study.

Ayurvedic Sources

- *Charaka Samhita* (*Śārīra Sthāna*)
- *Sushruta Samhita* (*Śārīra Sthāna*)
- *Ashtanga Hridaya* (*Śārīra Sthāna*)

Modern Sources

- Standard textbooks of human embryology, anatomy, and developmental biology.
- Peer-reviewed articles on fetal growth, genetics, nutrition, and psychosomatic influence on pregnancy.

Method of Analysis

- Each component of *Śadbhāva* was individually analyzed and correlated with modern scientific concepts based on functional similarity.
- This study is a descriptive, analytical, and comparative review.

Methodology

- Extraction of classical references related to *Śadbhāva*
- Interpretation of *Ayurvedic* concepts
- Correlation with modern embryological principles based on functional similarity
- Scientific synthesis and discussion

Aims and Objectives

To critically analyze the concept of *Śadbhāva* in fetal development as described in classical *Ayurvedic* literature and to correlate these principles with contemporary scientific concepts of human embryology and developmental biology.

Results

Śadbhāva Siddhānta and Its Components

Ayurveda states that fetal development (*Garbha Sambhava*) is dependent upon the following six *Bhāvas* ^[2, 3, 4].

1. *Mātrja Bhāva* (Maternal Factors)

Ayurvedic Description: *Mātrja Bhāva* includes structures and qualities derived predominantly from the mother, such as skin (*Tvak*), blood (*Rakta*), muscles (*Māmsa*), fat (*Meda*), liver, spleen, and softness of body tissues. The uterus (*Garbhaśaya*) and maternal health are considered crucial.

Modern Correlation ^[5]

- Maternal genetic contribution (ovum)
- Mitochondrial DNA inheritance
- Uterine receptivity and placental development
- Maternal hormonal milieu and immune tolerance

Modern science confirms that maternal health, uterine blood flow, and mitochondrial inheritance significantly influence fetal growth and metabolic programming.

2. *Pitrja Bhāva* (Paternal Factors)

Ayurvedic Description: *Pitrja Bhāva* contributes to the formation of hard and structural components such as bones (*Asthi*), teeth (*Danta*), nails (*Nakha*), hair (*Keśa*), and firmness of tissues.

Modern Correlation:

- Paternal nuclear DNA contribution
- Y-chromosome-linked traits
- Genetic determinants of skeletal development

Paternal genes play a decisive role in skeletal morphology and overall physical constitution, supporting the *Ayurvedic* view.

3. *Ātmāja Bhāva* (Individuality Factor)

Ayurvedic Description: *Ātmāja Bhāva* determines individuality, lifespan, intelligence, congenital tendencies, and unexplained variations, influenced by past karmic impressions.

Modern Correlation:

- Genetic individuality
- Random genetic recombination
- Developmental variability and congenital anomalies

Though metaphysical, *Ātmāja Bhāva* aligns with modern recognition of unexplained genetic expression and individuality beyond environmental factors.

4. *Rasaja Bhāva* (Nutritional Factor)

Ayurvedic Description: *Rasaja Bhāva* refers to nourishment derived from maternal *Āhāra Rasa* via the placenta, supporting growth, strength, complexion, and vitality.

Modern Correlation:

- Placental nutrient transfer
- Macronutrients and micronutrients (iron, iodine, folic acid, calcium)
- Fetal growth and organ maturation

Modern obstetrics strongly emphasizes maternal nutrition, validating the *Rasaja Bhāva* concept.

5. *Sattvaja Bhāva* (Psychological Factor)

Ayurvedic Description: *Sattvaja Bhāva* governs mental qualities, emotional stability, intellect, memory, and behavioral tendencies of the fetus.

Modern Correlation:

- Maternal stress and cortisol levels
- Neurodevelopment and fetal brain programming
- Long-term behavioral and cognitive outcomes

Scientific evidence confirms that maternal mental state directly affects fetal neurodevelopment.

6. *Satmyaja Bhāva* (Environmental Adaptation Factor)

Ayurvedic Description: *Satmyaja Bhāva* represents adaptation to diet, climate, habitat, and lifestyle.

Modern Correlation:

- Epigenetic modifications
- Environmental programming
- Cultural and dietary adaptation

This *Bhāva* closely resembles modern epigenetics, where environmental exposures alter gene expression.

Table 1: Summary of this *Shad bhav*:

<i>Bhāva</i>	<i>Ayurvedic Description</i>	Structures/Functions Influenced	Modern Correlation ^[6]
<i>Mātrja Bhāva</i>	Maternal contribution	Skin, blood, muscle, organs	Maternal genome, mitochondrial DNA, uterine environment
<i>Pitrja Bhāva</i>	Paternal contribution	Bones, teeth, hair, nails	Paternal nuclear DNA, Y-chromosome traits
<i>Ātmāja Bhāva</i>	Soul-dependent factors	Life, individuality, lifespan	Genetic individuality, unexplained biological variance
<i>Rasaja Bhāva</i>	Nutrition from maternal rasa	Growth, nourishment, immunity	Placental nutrition, maternal-fetal circulation
<i>Sattvaja Bhāva</i>	Mental and psychological factors	Mind, intellect, behavior	Neurodevelopment, prenatal psychology
<i>Satmyaja Bhāva</i>	Adaptability and suitability	Immunity, tolerance, health	Epigenetics, environmental adaptation

Discussion

The *Śadbhāva Siddhānta* provides a multidimensional view of embryogenesis, integrating physical, nutritional, psychological, and environmental dimensions. Modern embryology, though technologically advanced, increasingly recognizes the importance of maternal mental health, nutrition, and environment, validating *Ayurvedic* insights.

Ayurveda's preventive approach—through *Garbhini Paricharya* (antenatal care)—emphasizes regulation of diet, behavior, emotional stability, environmental harmony to ensure healthy progeny which parallels current recommendations in obstetrics for holistic prenatal care^[7, 8].

The convergence of *Śadbhāva* with modern science highlights *Ayurveda's* relevance as a complementary framework in developmental biology.

Conclusion

Śadbhāva Siddhānta is a comprehensive embryological doctrine that aligns remarkably with modern scientific principles of fetal development. Its integrative approach underscores the importance of genetic factors, nutrition, mental health, and environment in shaping fetal growth. Incorporating these principles into contemporary maternal healthcare can enhance preventive strategies and promote healthier progeny.

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