ASHTA AHARA VIDHI VISHESHAYATANA IN AYURVEDA AND MODERN NUTRITION: *A SYSTEMATIC REVIEW* OF PRINCIPLES, APPLICATIONS, AND PERSONALIZED HEALTH IMPLICATIONS

Jaykumar Ade[1], Asharani Medidar[2], Revensiddha Usturge[3], Anand Madgundi[4], Sandeep Deore[5]

1. **Assistant Professor, Kriya Sharir Dept. SGR Ayurved College, Solapur, Maharashtra.**
2. **Assistant Professor, Panchkarma Dept. SGR Ayurved College, Solapur, Maharashtra.**
3. **Associate Professor, Agadtantra Dept. SGR Ayurved College, Solapur, Maharashtra.**
4. **Assistant Professor, Rachna Sharir Dept. SGR Ayurved College, Solapur, Maharashtra.**
5. **Assistant Professor, Panchkarma Dept. G.S Ayurved College, Ahmednagar, Maharashtra.**

Address for correspondence:

Dr. Ade Jaykumar S. Assistant Professor,

Kriya Sharir Dept.

Seth Govindji Raoji Ayurved College, Solapur, Maharashtra.

Emil id: drjayade@gmail.com

Ph. No: +919822369266.

ABSTRACT

Ashta Ahara Vidhi Visheshayatana, a fundamental dietary doctrine in Ayurveda, delineates eight cardinal factors that govern the impact of food on Agni (digestive fire), Dosha equilibrium, Dhatu (tissue nourishment), and overall well-being. This systematic review critically examines its principles, applications, and alignment with modern nutritional science. Through an integrative analysis of classical Ayurvedic literature and contemporary research, this study elucidates the role of Prakriti (intrinsic nature), Karana (processing), Samyoga (combinations), Rashi (quantity), Desha (geographical considerations), Kala (temporal factors), Upayoga Samstha (dietary conduct), and Upabhokta (individual suitability) in optimizing digestion, metabolism, and disease prevention. The findings reveal a profound convergence between Ayurvedic dietary wisdom and emerging scientific paradigms, particularly in gut microbiota modulation, chrononutrition, nutrigenomics, and metabolic health. While Ayurveda provides a time-tested, holistic approach to nutrition, further clinical validation and interdisciplinary research are imperative for its global integration into contemporary dietary sciences.

Keywords: Ashta Ahara Vidhi Visheshayatana, Ayurvedic Dietetics, Digestive Health, Metabolic Regulation, Food Processing, Dietary Compatibility, Personalized Nutrition, Holistic Health

INTRODUCTION

Ayurveda emphasizes a holistic approach to health and well-being, where diet plays a pivotal role in maintaining physiological balance and preventing diseases. The concept of Ashta Ahara Vidhi Visheshayatana (Eight Factors Determining the Effect of Food) is a fundamental dietary guideline in Ayurveda that provides a structured framework for optimizing digestion, metabolism, and overall health.(1) These eight factors—Prakriti (nature of food), Karana (processing), Samyoga (combination), Rashi (quantity), Desha (place), Kala (time), Upayoga Samstha (dietary rules), and Upabhokta (individual suitability)—govern the selection, preparation, and consumption of food based on an individual's constitution, environmental conditions, and seasonal variations.

The principles of Ashta Ahara Vidhi Visheshayatana extend beyond nutrition to influence the body's Dosha (biological humors: Vata, Pitta, and Kapha), Agni (digestive fire), and Dhatu. These factors collectively determine the bioavailability, efficacy, and therapeutic potential of food substances, thereby preventing the formation of Ama (toxins) and ensuring optimal nourishment.(2) While Ayurveda has traditionally outlined these dietary principles, modern nutritional science has begun to validate their relevance through research on digestion, metabolism, food synergy, and personalised nutrition. Studies on macronutrient composition, glycemic response, food processing, meal timing, and gut microbiota demonstrate striking parallels with Ayurvedic dietary wisdom, reinforcing the enduring significance of these principles in contemporary health science.

This review explores the Ayurvedic concept of Ashta Ahara Vidhi Visheshayatana and its alignment with modern nutrition, highlighting its role in digestion, metabolism, and personalised health. Integrating Ayurveda with contemporary research underscores these principles' relevance in disease prevention and holistic well-being. Future studies should focus on scientific validation and clinical applications to bridge the gap between Ayurveda and modern dietary science.

Need of the Study:

The rise in lifestyle disorders and metabolic diseases calls for a reassessment of traditional healthcare. Ayurveda offers a holistic approach, yet its integration into mainstream medicine is limited by a lack of standardized research. This study aims to bridge this gap by scientifically validating Ayurvedic principles, exploring their therapeutic potential, and addressing evolving disease patterns influenced by diet, environment, and stress. By aligning traditional wisdom with modern methodologies, it seeks to enhance Ayurveda’s credibility and global acceptance as an evidence-based system.

Objective of Study:

- To systematically review the principles of Ashta Ahara Vidhi Visheshayatana from classical Ayurvedic texts and contemporary scientific literature.
- To evaluate the applications of these principles in digestion, metabolism, and personalized nutrition.
- To explore the alignment between Ayurvedic dietary guidelines and modern nutritional science.
- To identify gaps in scientific validation and propose areas for future research

METHODS

Eligibility Criteria and Screening the Title

The eligibility criteria for the systematic review were established based on the objectives of the study. The selection process was guided by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework.

Inclusion Criteria:

1. Ayurvedic Literature: Classical Ayurvedic texts and commentaries discussing Ashta Ahara Vidhi Visheshayatana.
2. Scientific Research: Studies on digestion, metabolism, and personalized nutrition related to Ayurvedic dietary principles.
3. Modern Nutritional Science: Articles from peer-reviewed journals linking food properties, processing, and dietary practices to health outcomes.

4. Interdisciplinary Studies: Research exploring correlations between Ayurvedic dietary guidelines and modern nutritional frameworks such as gut microbiota, nutrigenomics, and metabolic health.
5. Language: Studies published in English and Sanskrit with English translations.
6. Publication Type: Original research articles, review articles, meta-analyses, and book chapters.

Exclusion Criteria:

1. Studies with insufficient relevance to Ashta Ahara Vidhi Visheshayatana or its applications.
2. Non-peer-reviewed articles, blogs, or opinion pieces.
3. Studies lacking full-text access or incomplete methodology.
4. Studies focusing solely on other aspects of Ayurveda unrelated to dietary principles.

The title screening was performed to eliminate studies that did not align with the inclusion criteria. Duplicates were removed before proceeding to abstract and full-text screening.

Data Extraction and Analysis

The data extraction process was structured to ensure a comprehensive synthesis of Ayurvedic dietary principles and their scientific validation.

1. Bibliographic Information: Title, authors, year of publication, source, and journal details.
2. Study Design: Type of study (e.g., clinical trial, observational study, review article).
3. Key Findings:
    - Description of Ashta Ahara Vidhi Visheshayatana principles in Ayurveda.
    - Scientific validation of Ayurvedic dietary concepts.
    - Intersections between Ayurveda and modern nutrition.
    - Health implications of Ayurvedic dietary practices.
4. Outcome Measures:
    - Impact on digestion, metabolism, and disease prevention.
    - Influence on gut microbiota, chrononutrition, and nutrigenomics.
    - Role in personalised nutrition and holistic health.

PRISMA Flow Diagram Showing Selection Methodology

The initial search yielded 40 records. After removing duplicates, 32 records remained. Additionally, 2 records were identified from classical Ayurvedic texts, bringing the total to 34. Title and abstract screening led to the exclusion of 30 records. Full-text eligibility assessment was conducted on the remaining 27 studies, of which 5 were excluded due to methodological limitations or irrelevance. Ultimately, 24 studies were included in the systematic review.

PRISMA Flow Diagram for the Systematic Review:

1. Identification:
    - Records identified through database searches (PubMed, Google Scholar, Semantic Scholar) = n = 40
    - Additional records from classical Ayurvedic texts = n = 2
    - Duplicate records removed = n = 8
    - Records after removing duplicates = n = 34
2. Screening:
    - Records screened by title and abstract = n = 34
    - Records excluded based on title/abstract = n = 30-
    - Full-text articles assessed for eligibility = n = 27
3. Eligibility:
    - Studies meeting inclusion criteria = n = 24
4. Included Studies:
    - Final studies included in systematic review = n = 24

RESULT

The comprehensive review of Ashta Ahara Vidhi Visheshayatana (Eight Factors Determining the Effect of Food) highlights its profound impact on digestion, metabolism, and overall health. Each of these factors influences food substances' bioavailability, efficacy, and therapeutic potential.

Ayurvedic Perspective on Ashta Ahara Vidhi Visheshayatana

1. Prakriti (Nature of Food)

- Every food item possesses inherent properties (Guna), taste (Rasa), potency (Virya), Vipaka (post-digestive effect), and Prabhava (specific action) that influence digestion and metabolism.[3]

- Foods are classified based on their effects, such as Guru (heavy) and Laghu (light), Ushna (hot) and Sheeta (cold), Snigdha (unctuous) and Ruksha (dry), Manda (dull) and Teekshna (sharp).
- Heavy foods (e.g., dairy, black gram) require strong Agni (digestive fire) for digestion, while light foods (e.g., rice, green gram) are easily digestible.[4]
- Hot potency foods (e.g., garlic, mustard) stimulate Agni, whereas cold potency foods (e.g., cucumber) pacify Pitta and may suppress digestion.[4]

2. Karana (Processing of Food)

- Processing techniques like boiling, roasting, fermentation, churning, and purification (Shodhana) alter the properties of food.[5]
- Heat processing (Agni Samskara) transforms raw food into a more digestible form (e.g., roasting grains enhances digestibility).
- Shodhana (detoxification) is used in Ayurveda to remove harmful effects from certain foods and drugs (e.g., detoxification of sesame seeds and metals).[6]

3. Samyoga (Combination of Food Items)

- Food combinations influence their overall effect. Ayurveda emphasizes Pathya (compatible) and Apathya (incompatible) food combinations.
- Viruddha Ahara (incompatible combinations) generate Ama (toxins) and lead to metabolic disorders.[7] Examples include:
    - Milk with fish or sour fruits – creates toxins due to contradictory digestion times.
    - Honey and ghee in equal proportions – considered toxic.
    - Fruits with milk – causes fermentation and indigestion.

4. Rashi (Quantity of Food)

- Ayurveda emphasizes moderation in food intake, considering Sarvagraha (total quantity of a meal) and Parigraha (quantity of individual food components).
- Excessive food intake leads to metabolic disorders, while inadequate intake results in weakness and nutritional deficiencies.[8]
- The stomach should be half-filled with solid food, one-fourth with liquids, and one-fourth left empty for optimal digestion.[9]

5. Desha (Place of Origin and Consumption of Food)

- Jangala Desha (arid region) individuals require unctuous and cooling foods, whereas Anupa Desha (marshy region) individuals need drying and light foods to balance Kapha.

- Locally grown and seasonal foods are recommended for better digestion and adaptation to environmental conditions.[10]

6. Kala (Time and Season of Consumption)

- Food intake should align with daily routine (Dina Charya) and seasonal changes (Ritu Charya).
- Midday meals should be the heaviest as digestive fire (Agni) is at its peak.
- Seasonal modifications:
    - Summer (Grishma Ritu): Light, unctuous foods are recommended.
    - Winter (Hemanta Ritu): Heavy, nourishing foods like ghee, nuts strengthen the body.
    - Monsoon (Varsha Ritu): Easily digestible, hot and sour foods counteract weak digestion.

7. Upayoga Samstha (Dietary Guidelines and Eating Habits)

- Ayurveda prescribes proper eating habits as Ahar Vidhi Vidhna for optimal digestion[11]:
- Ushnam Bhunjita (Consume Warm Food)

Warm food enhances taste, stimulates digestion, and balances Vata and Kapha. Extremely hot or reheated food can cause burning, indigestion, and bleeding disorders. Cold food weakens digestion, causing bloating and nausea.

- Snigdham Bhunjita (Consume Unctuous Food)

Oily food aids digestion, nourishes tissues, and strengthens the body. Excessive dryness leads to indigestion, weakness, and constipation, while excessive oiliness causes drowsiness and Kapha-related disorders.

- Maatraavat Bhunjita (Eat in Proper Quantity)

Balanced intake maintains Dosha harmony and digestion. Heavy foods should be eaten in moderation, while lighter foods should not exceed satiety. Overeating causes metabolic issues, while undereating leads to weakness and Vata disorders.

- Jirne Bhunjita (Eat After Digesting Previous Meal)

Eating only after complete digestion prevents Dosha imbalance. Food should be consumed when hunger arises naturally, ensuring proper assimilation and metabolic balance.

- Viryaavirudham Bhunjita (Avoid Incompatible Foods)

Foods with opposite potencies (e.g., milk with sour fruits) can cause serious health issues like skin diseases and digestive disorders. Avoiding such combinations ensures overall well-being.

- Ishte Deshe Ishta Sarvopakaranam Bhunjita (Eat in a Pleasant Environment)

Dining in a clean, peaceful place with proper accessories prevents mental agitation and enhances digestion. Avoid eating in unhygienic, stressful, or inauspicious surroundings.

- Naatidrutam Bhunjita (Do Not Eat Too Fast)

Eating too quickly can cause choking, improper digestion, and failure to appreciate food quality. Slow, mindful eating ensures better digestion and assimilation.

8. Upabhokta (Individual Suitability)

- The effect of food depends on an individual's:
    - Prakriti (body constitution) – Vata, Pitta, or Kapha dominance.
    - Agni (digestive capacity) – Individuals with strong digestion can tolerate heavy foods, whereas those with weak digestion require light meals.
    - Vyadhi (disease condition) – Specific foods are recommended or avoided based on disease pathology.

Modern Scientific Perspective on Ashta Ahara Vidhi Visheshayatana

Recent research has elucidated the scientific underpinnings of the eight dietary principles outlined in Ayurveda's Ashta Ahara Vidhi Visheshayatana, highlighting their relevance in contemporary nutrition and health management.

1. Prakriti (Intrinsic Nature of Food): Modern nutritional science acknowledges that the inherent properties of food—such as macronutrient composition, glycemic index, and lipid profiles—significantly influence metabolic responses.[12] For instance, foods rich in complex carbohydrates and fiber (e.g., whole grains) are digested more slowly, leading to sustained energy release and improved glycemic control. This aligns with the Ayurvedic classification of foods based on their digestibility and impact on bodily functions.

2. Karana (Processing of Food Substances): Food processing methods, such as cooking, fermentation, and mechanical alteration, can modify the nutritional profile and bioavailability of nutrients.[13] For example, cooking tomatoes increases the bioavailability of lycopene, a potent antioxidant. Fermentation introduces beneficial probiotics, enhancing gut health and nutrient absorption.[14] These modern findings corroborate Ayurvedic insights on the significance of food-processing techniques.

3. Samyoga (Dietary Combinations): The concept of food synergy is well-recognized in modern nutrition. Combining certain foods can enhance nutrient absorption and efficacy.[15] For instance, consuming vitamin C-rich foods alongside iron-rich plant foods enhances non-heme iron absorption.[16] Conversely, certain combinations can impede digestion or nutrient uptake, validating Ayurvedic cautions against incompatible food pairings.

4. Rashi (Quantity of Food Intake): Portion control is a cornerstone of modern dietary guidelines. Overeating can lead to obesity and metabolic disorders, while under-eating may result in nutrient deficiencies.[17] Ayurveda's emphasis on appropriate food quantity parallels contemporary recommendations for balanced caloric intake tailored to individual energy requirements.

5. Desha (Geographical Considerations): Geographical and environmental factors influence local food availability and nutritional needs.[18] Modern nutrition advocates for diets that consider regional food sources and climate, supporting sustainable practices and cultural relevance. This perspective aligns with Ayurvedic principles of tailoring diet to one's habitat and environmental conditions.

6. Kala (Temporal Considerations): Chrononutrition studies suggest that meal timing affects metabolic health.[19] Aligning food intake with circadian rhythms can optimize digestion and metabolic efficiency.[20] Ayurveda's guidance on seasonal and daily dietary adjustments reflects an early understanding of temporal influences on health.

7. Upayoga Samstha (Dietary Guidelines and Behavioral Aspects): Mindful eating practices, such as eating without distractions and chewing food thoroughly, are associated with better digestion and weight management.[21] These practices resonate with Ayurvedic recommendations for conscious eating behaviors.

8. Upabhokta (Individual Suitability): Personalized nutrition, which considers genetic makeup, health status, and lifestyle, is a growing focus in modern dietary planning.[22] This approach mirrors Ayurveda's emphasis on customizing diet to individual constitution and needs.

Incorporating these Ayurvedic principles into modern dietary practices offers a holistic framework for enhancing health and preventing lifestyle-related disorders. The convergence of Ayurveda and contemporary science underscores the enduring relevance of Ashta Ahara Vidhi Visheshayatana in promoting optimal nutrition and well-being.

DISCUSSION

This systematic review highlights profound role of ashta hara vidhi visheshayatana in shaping digestion, metabolism, and overall health. These eight factors provide a structured approach to dietary regulation, emphasizing the interplay between food properties, processing, combinations, quantity, regional influences, time of consumption, dietary habits, and individual suitability. Ayurveda’s holistic dietary science not only aligns with modern nutrition but also offers unique insights into personalized health and disease management.

Ayurveda considers food as a vital contributor to health and disease, where its impact extends beyond mere nutrition to influence Dosha balance, Agni (digestive fire), and Dhatu (tissue) formation. Each factor of Ashta Ahara Vidhi Visheshayatana has been meticulously detailed in classical texts, underscoring its role in preventing Ama (toxins), ensuring optimal digestion, and maintaining Ojas (vital essence). Principles such as Prakriti (nature of food) and Upabhokta (individual suitability) emphasize the need for a personalized diet tailored to an individual’s constitution, digestive strength, and disease condition. The significance of Karana (processing) and Samyoga (combinations) demonstrates Ayurveda’s awareness of food synergy, detoxification, and enhancement of therapeutic efficacy.[23]

Applying these principles in daily life ensures balanced nutrition, prevents metabolic disorders, and enhances therapeutic outcomes. The concept of Viruddha Ahara (incompatible food combinations) finds relevance in contemporary food science, where improper combinations contribute to inflammatory diseases, food intolerances, and digestive disorders.[24] The role of

Rashi (quantity) in portion control resonates with modern approaches to obesity and malnutrition. Seasonal and geographical dietary recommendations (Kala and Desha) align with sustainable eating practices and adaptation to environmental variations, ensuring optimal nutrient absorption and metabolic efficiency. Ayurvedic dietary guidelines (Upayoga Samstha) also emphasize mindful eating, which modern research links to improved digestion and psychological well-being.

Modern nutritional science corroborates many Ayurvedic dietary principles. Research on the glycemic index, nutrient bioavailability, circadian rhythms, and gut microbiota aligns with the Ayurvedic understanding of food properties, meal timing, and digestive processing. The impact of food processing on nutrient retention and absorption supports Ayurvedic concepts of Karana. The emerging field of nutrigenomics reinforces the Ayurvedic principle of Upabhokta, emphasizing individualized dietary needs based on genetic and metabolic profiling.

Limitations and Future Scope:

Despite strong theoretical foundations, empirical validation of these principles through large-scale clinical trials remains limited. Ayurveda's qualitative descriptions require robust standardization for integration into modern dietary guidelines. Further interdisciplinary research can bridge the gap between Ayurveda and contemporary science, facilitating a comprehensive approach to nutrition and therapeutics. Future studies should explore the molecular mechanisms underlying Ayurvedic dietary principles and their role in chronic disease prevention and management.

CONCLUSION

Ashta Ahara Vidhi Visheshayatana provides a comprehensive Ayurvedic framework for diet, digestion, and health optimization. This systematic review highlights its profound impact on metabolism, disease prevention, and personalized nutrition, emphasizing its potential for integration into Public Health through further empirical research.

REFERENCES

1. Tripathi Bb. Charak Samhita. 2019th ed. Vol. 1. Varanasi: Chaukhamba Surbharati Prakashan;
2. Dhaygude UM, P. Bhurke R, S. Videkar S, S. Jadhav S. ROLE OF AAHAR VIDHI VISHESHAYATANA IN PREVENTION OF LIFESTYLEDISORDERS – A REVIEW STUDY. Int Ayurvedic Med J. 2023 Aug 26;11(8):1980–8.
3. Tripathi B. Charak Samhita. In Varanasi: Chaukhamba Surbharati Prakashan; 2019. (Vimansthana, Adhyay 1; vol. 1).
4. Agrawal A, Yadav C, Meena M. Physiological aspects of Agni. AYU Int Q J Res Ayurveda. 2010;31(3):395.
5. Sarkar P. Traditional and ayurvedic foods of Indian origin. J Ethn Foods. 2015 Sep;2(3):97–109.

6. Maurya S, Seth A, Laloo D, Singh N, Gautam DS, Singh A. Śodhana: An Ayurvedic process for detoxification and modification of therapeutic activities of poisonous medicinal plants. Anc Sci Life. 2015;34(4):188.
7. Kohakade DPV, Burley DAK. CONCEPT OF VIRUDDHA AHARA W.S.R. TO INCOMPATIBLE FOOD. 7(5).
8. Kiani AK, Dhuli K, Donato K, Aquilanti B, Velluti V, Matera G, et al. Main nutritional deficiencies. J Prev Med Hyg. 2022 Oct 17;Vol. 63 No. 2S3:E93 Pages.
9. Nanayakkara Vidanagamage Yasangi Diloopa, Edirimuni Rodrigo Hathishiya Sujatha Silva Ediriweera. REVIEW ON AYURVEDA CONCEPTS ON THE REGIMEN OF FOOD AND DRINK CONSUMPTION. AYUSHDHARA. 2021 May 16;3229–36.
10. Vargas AM, De Moura AP, Deliza R, Cunha LM. The Role of Local Seasonal Foods in Enhancing Sustainable Food Consumption: A Systematic Literature Review. Foods. 2021 Sep 17;10(9):2206.
11. Sankar RNKLJ, Harjpal L, Chandrakar R, Naik S. A review article on Ahara Vidhi Vidhana (Rules for consuming food) in consonance with Charaka Samhita. J Indian Syst Med. 2021 Jul;9(3):161–5.
12. Dos Santos KC, Olofsson C, Cunha JPMCM, Roberts F, Catrina S, Fex M, et al. The impact of macronutrient composition on metabolic regulation: An Islet-Centric view. Acta Physiol. 2022 Dec;236(4):e13884.
13. Zheng J, Xiao H. Editorial: The Effects of Food Processing on Food Components and Their Health Functions. Front Nutr. 2022 Feb 15;9:837956.
14. Leeuwendaal NK, Stanton C, O'Toole PW, Beresford TP. Fermented Foods, Health and the Gut Microbiome. Nutrients. 2022 Apr 6;14(7):1527.
15. Cömert ED, Gökmen V. Effect of food combinations and their co-digestion on total antioxidant capacity under simulated gastrointestinal conditions. Curr Res Food Sci. 2022;5:414–22.
16. Skolmowska D, Głąbska D. Effectiveness of Dietary Intervention with Iron and Vitamin C Administered Separately in Improving Iron Status in Young Women. Int J Environ Res Public Health. 2022 Sep 20;19(19):11877.
17. Razzoli M, Pearson C, Crow S, Bartolomucci A. Stress, overeating, and obesity: Insights from human studies and preclinical models. Neurosci Biobehav Rev. 2017 May;76:154–62.
18. Fanzo J. The importance of food systems and the environment for nutrition. Am J Clin Nutr. 2021 Jan;113(1):7–16.
19. Kessler K, Pivovarova-Ramich O. Meal Timing, Aging, and Metabolic Health. Int J Mol Sci. 2019 Apr 18;20(8):1911.
20. Meléndez-Fernández OH, Liu JA, Nelson RJ. Circadian Rhythms Disrupted by Light at Night and Mistimed Food Intake Alter Hormonal Rhythms and Metabolism. Int J Mol Sci. 2023 Feb 8;24(4):3392.
21. Cherpak CE. Mindful Eating: A Review Of How The Stress-Digestion-Mindfulness Triad May Modulate And Improve Gastrointestinal And Digestive Function.
22. Ordovas J. Personalised nutrition and health. BMJ [Internet]. 2018; Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC6081996/

23. Sharma B, Gaur MB. SIGNIFICANCE OF AHARA-VIDHI-VISHESHAYATAN IN TODAY'S ERA. Int J Ayurveda Pharma Res. 2020;8(12):43–6.
24. Mishra AK, Singh R, Jain S, Charde VA, Jagtap CY, Narasimhaji ChV. Insights into food incompatibilities: Ayurveda and modern perspectives. J Drug Res Ayurvedic Sci. 2024 Oct;9(Suppl 1):S30–6.