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DYSLIPIDEMIA: A REVIEW FROM AYURVEDA PERSPECTIVE

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ABSTRACT

Background: Most of the people neglect their lifestyle and diet patterns which lead to several metabolic disorders, in which Dyslipidemia occupies a major part which leads to risk factor for atherosclerotic. India shows increasing mean total cholesterol levels as per review of population-based studies and reported that high cholesterol is present in 25–30% of urban and 15–20% rural subjects. Dyslipidemia is *Santarpanajanya vyadhi* as the *Poshaka Medodhatu* (comprising of different categories of lipoproteins) will be in excess in circulation can be referred to the conditions such as quantitatively increased *Abaddha Meda* or *Asthayi Medodhatu*. Material and Methods: Ayurvedic texts, as well as the data bases Google scholar, PubMed, Medline, AYUSH Research Portal, and Digital Helpline for Ayurveda Research Articles (DHARA), Research Gate web-based search engines, journal, were used to search for relevant literature and information. Result: Faulty diet (which are high in saturated fat and cholesterol), lifestyle and hereditary factors are the major etiological factors of Dyslipidemia. *Apakkva Poshaka Medo Dhatu* is nothing but the abnormal and excess total lipids, total phospholipids, triglycerides, fatty acids and cholesterol etc., and also risk factor for diseases like *Prameha*, *Jwara, Bhagandara, Vrana, Vataroga*, etc. Treatments which reduce *Medas* (fat), *Anila* (vata) and *Shleshmana* (*Kapha*) are desirable required. Conclusion: The fundamental principles of Ayurveda should applied for achieving *Dhatusamya* and restoring the normal function of *Agni, Dosha, Dhatu*.

Keywords: Cholesterol, dyslipidemia, *medodhatu*, *santarpanajanya vyadhi*, triglycerides.

1. INTRODUCTION

Most of the people neglect their lifestyle and diet patterns which lead to several metabolic disorders, in which Dyslipidemia occupies a major part which leads to risk factor for atherosclerotic. India shows increasing mean total cholesterol levels as per review of population-based studies and reported that high cholesterol is present in 25–30% of urban and 15–20% rural subjects. Faulty diet (which are high in saturated fat and cholesterol), lifestyle and hereditary factors are the major etiological factors for Dyslipidemia which increases blood cholesterol and triglyceride level. In India most common dyslipidemia is borderline high LDL cholesterol low HDL cholesterol, and high triglycerides. In terms of Ayurveda, as mentioned in *Santarpaniya Adhyaya* of *Charakasamhita*², can be correlated with '*Santarpaka Hetu*' as *Kapha* and *Medovardhaka*. Dyslipidemia can be defines as the *Poshaka Medodhatu* (comprising of different categories of lipoproteins) will be in excess in circulation can be referred to the conditions such as quantitatively increased *Abaddha Meda* or *Asthayi Medodhatu* in Ayurveda³ and also risk factor for diseases like *Prameha, Jwara, Bhagandara, Vrana, Vataroga*, etc⁴. *Acharya Vagbhata* has clearly mentioned that the *medodushti vikaras* are to be treated with *Langhana* therapy on regular basis (*Nityam Langhaneeyam*)⁵.

2. AIMS AND OBJECTIVES

To review Dyslipidemia from Ayurvedic and modern science point of view along with prognosis (*Sadhyasadhyata*) and management protocol.

3. MATERIALS AND METHODS:

To fulfil the aims and objectives relevant Ayurvedic texts, as well as the data bases Google scholar, PubMed, Medline, AYUSH Research Portal, and Digital Helpline for Ayurveda Research Articles (DHARA), dissertation works from Ayurveda colleges, studies studies available on Research Gate web-based search engines, journal, were used to searched and presented in systematic manner.

¹ R. Gupta, et al., Recent trends in epidemiology of dyslipidemias in India, Indian Heart J (2017), http://dx.doi. org/10.1016/j.ihj.2017.02.020

² Acharya YT, editor Agnivesha, Charaka Samhita Sutra. Sthana. Ayurveda Dipika Vyakhya, Sanskrit Version. Ch.23. Ver. 3-4. Reprint edition, 2011. Varanasi: Chaukhamba Publications, New Delhi, Pg. 122.

³ Acharya YT, editor, Agnivesha, Charaka Samhita. Vimana Sthana. Ayurveda Dipika Vyakhya, Sanskrit Version. Ch.5. Ver.16. Reprint edition, 2011. Varanasi: Chaukhamba Publications, Pg.251.

⁴ Prasad SVLN, Rao V Prahalad, Punita V, Murali Manohar Raju Y, Sharmila UV, Anand B. Efficacy and safety of an Ayurvedic regimen in Medoroga. Indian J Traditional Knowl. 2009; 8(3): 379-386.

⁵ Paradkar HS, editor Vagbhata, Ashtanga Hridaya. Sutra Sthana. Sarvangasundara commentary of Arunadatta and Ayurvrdarassayana commentary of Hemadri, Sanskrit Version.Ch.14. Ver.11. Reprint edition, 2006. Varanasi: Chaukhamba Krishnadas Academy, Pg. 224.

4. RESULT

The study of Ayurvedic literature bears certain ambiguous references pertaining to an increase in the amount of circulating body lipids, yet the literal meaning of 'Dyslipidemia' is not found to be distinctly stated anywhere. The study of Dyslipidemia can be done on the basis of studying two of the closest diseases in Ayurveda having some amount of relation with Dyslipidemia are *Medodhatu dushti*, *Atisthaulya* or *Medoroga* and *Prameha*. The disorder of *Medo Dhatu* indicates the abnormalities of *Medo Dhatu*, qualitatively or quantitatively, and functionally or structurally.

4.1. Aetiopathology of Medo Dhatudushti

Sushruta and Vagbhata have mentioned the Medo Dushti as an endogenous entity being caused by the disturbance of internal intracellular metabolism and the respective Agni (enzyme). Charaka has mentioned the etiological factors for Medo Dushti, which are mostly exogenous and he has also particularly mentioned 'Beejadosha' as a causative factor for over production of the Medo Dhatu.

Various etiological factors for the over production and accumulation of *Medo Dhatu* inside the body under different headings in different ayurvedic texts, like *Sthaulya* in *Charaka Samhita* and *Ashtanga Samgraha*, *Medo Roga* in *Madhava Nidana*, *Bhavaprakasha*, *Shrangadhara* etc.

All the causative factors of *Medo Dushti* may be classified under four groups which are as follows (Table 1,2,3,4): -

- 1. Aharaja Hetus (Dietary causes)
- 2. *Viharaja Hetus* (Regimental or Behavioral cause)
- 3. *Manas-vyaparaja Hetus* (Psychogenic causes)
- 4. Other or miscellaneous *Hetus* (which are not included in the above three)

Table No. 1: Aharaja Hetus

Sr. No.	HETU	CH.	SU.	VA.	MA.	BH.
1.	Atibhojanam (Over eating)	+	+	+	-	-
2.	Guruahara (Excessive consumption of Heavy food)	+	-	-	-	-
3.	Madhura Ahara (Excessive consumption of sweet food)	+	-	-	-	+
4.	Shita Ahara (Excessive consumption of cold diet)	+	-	-	-	-
5.	Snigdha Ahara (Excessive consumption of unctuous food)	+	-	+	-	+
6.	Navanna Sevana (Usage of fresh grain)	+	-	-	-	-
7.	Navamadya Sevana (Usage of fresh alcoholic preparation)	+	-	-	-	-
8.	Gramya Rasa Sevana (Usage of domestic	+	-	-	-	-

	animal's meat & soups)					
9.	Audak Rasa Sevana	+	-	-	-	-
10.	Payah Vikara Sevana (Excessive usage of milk	+	-	+	-	-
	and it's preparation)					
11.	Dadhi Sevana (Excessive usage of curd)	+	-		-	-
12.	Sarpi Sevana (Excessive usage of Ghee)	+	-	+	-	-
13.	Shleshmal Ahara Sevana (Kapha increasing	+	+	-	+	+
	food)					
14.	Ikshu Sevana (Usages of sugarcane's	+	-	+	-	-
	Preparations)					
15.	Guda Vaikrita Sevana (Usages of jaggery's	+	-	-	-	-
	Preparations)					
16	Mamsa Sevana (Usages of phasilous mungo)	+	-	-	-	-
17.	Adhyashana	-	+	-	-	-
18.	Shali Sevana	+	-	-	-	-
19.	Godhuma Sevana	+	-	-	-	-
20.	Rasayana Sevana	+	-	-	-	-
21.	Vrishya Sevana	+	-	-	-	-
22.	Santarpana Sevana	+	-	-	-	-

Table No. 2: Viharaja Hetus

Sr. No.	HETU	CH.	SU.	VA.	MA	BH.
1.	Avyayama (Lack of physical exercise)	+	+	-	+	+
2.	Avayaya (Lack of sexual life)	+		-	-	-
3.	Divasvapna (Day's sleep)	+	+	-	+	+
4.	Sukhasaya (Luxurious sitting)	+	-	+	-	_
5.	Snana Seva (After meals)	+	-	-	-	_
6.	Gandhamalyanusevanam (Using of perfumes garlands)	+	-	-	-	-
7.	Svapnaprasangat	+	-	-		
8.	Bhojanottar Snana (Bathing after taking the meals)					
9.	Bhojanottar Nidra (Sleeping after meal)					

Table No. 3: Manasa Vyaparja Hetus

Sr. No.	HETU	СН.	SU.	VA.	MA.	BH.
1.	Harshanityatva (Uninterupted cheerfulness)	+	+	-	+	-
2.	Achintanat (Lack of anxiety)	+	+	-	-	-
3.	Manasonivrttih (Relaxation from tension)	+	+	-	+	-
4.	Priyadarsana (Observations of beloved things)	+	-	-	-	-
5.	Saukhyena	-	+	-	-	-

Table No. 4: Other Hetus

Sr. No.	HETU	CH.	SU.	VA.	MA	BH.
1.	Amarasa	-	-	-	-	+
2.	Snigdha Madhura Basti Sevana (Administration of unctuous & Sweet enema)	+	-	+	-	-
3.	Tailabhyanga Sevana (Massaging of oil)	+	-	+	-	-
4.	Snigdha Udvartana Sevana	+	-	-	-	-
5.	Bija Swabhavat (Heredity)	-	-	-	-	-

4.2. Samprapti (Pathogenesis)

After intake of *Guru*, *Madhura*, *Shita*, *Snigdha* and *Shleshma* diet; the *Jatharagni* and *Bhutagni* act upon it and produce *Annarasa*. This *Annarasa* contains all the *Upadana Dhatus*, but the concentration of *Medo Upadana Dhatu* i.e., *Snehamsha* (triglycerides, fatty acid and glyceral) are more because the food articles are homologous to the *Medo Dhatu*. The aggravated *Kapha* and *Annarasa* circulate all over the body. At the time of circulation, the *Dhatwgni* act upon their *Upadana Dhatus* and produce respective *Sthayi Dhatus*, *Upadhatus* and *Malas* one after another. Likewise, the *Poshaka Medo Dhatu* is formed after the *Mamsagni Kriya* upon it. Now the *Medogni* is ready to digest the *Poshaka Medo Dhatu*, but due to its *Mandya* condtion, it cannot digest properly. The *Medo-agni* (enzyme) is not inferior in quality but qualitatively it is weak in respect of rich quantity of *Upadana Medo Dhatus* in *Annarasa* and hence it is not able to perform the *Dhatwagni Paka Kriya* properly. *Again*, the mentioned *Viharas* (regimen) aggravate the *Kapha*, therefore they do not stimulate the *Agnis* rather sometimes they inhibit the *Agnis* by the action of *Kapha*. Due to the weakness of *Medogni* the *Apakkava Medo Dhatu* is formed. This *apakkva Poshaka Medo Dhatu* is nothing but the abnormal and excess total lipids, total phospholipids, triglycerides, fatty acids and cholesterol etc.

On the other hand, the mentioned diet and regimen affect the *Medovaha Srotas* and produce the *Sanga and Avarodha* types of *Srotovaigunya*. Due to this *Srotovaigunya* the circulating *Kapha* and the vitiated *Medo Dhatu* (*Ama*) unite with each other i.e., *Sammurchana* of *Dosha* and *Dushya* takes place, therefore that vitiated *Medo Dhatu* is accumulated abnormally anywhere in the body hence the thickness of the skinfolds is increased abnormally.

In *Sahaja* (hereditary) type of *Medo Dushti* the *Medo-agni* and *Medovaha Srotas* are defective right from the birth time due to some *Beejadosha* (genetic factors). During the course of life, this defective condition may flare up at any time due to some predisposing factors and at that time the abnormal *Medo Dhatu* is formed and accumulates abnormally inside the body (Fig.1).

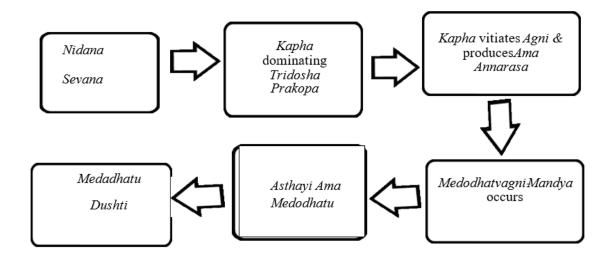


Fig.1: Samprapti (Pathogenesis) of Dyslipidemia (Medadhatu dushti)

4.3. Signs and Symptoms of Medo Dhatu Dushti

The signs and symptoms of *Medo Dushti* which are described in various Ayurvedic texts have been shown in the following (Table 5):

Table No. 5: Rupas of Medo Dushti described in various Ayurvedic Texts

Sr. No.	RUPA	СН.	SU.	A.S.	A.H.	MA	В.Н.
1	Ayusho Hrasah	+	-	-	-	-	+
2	Javoparodha	+	-	-	-	-	+
3	Krichhra Vyavaya	+	-	-	-	-	-
4	Daurbalya	+	-	+	-	-	-
5	Daurgandhya	+	+	+	-	+	+
6	Svedabadha	+	-	-	-	-	-
7	Ksudhatimatram	+	+	+	-	+	+
8	Pipasatiyogah	+	+	+	-	+	+
9	Kshudra Shwasa	-	+	+	-	+	+
10	Swedadhikya	-	+	+	_	+	+
11	Nidradhikya	-	+	+	_	+	+
12	Krathana	-	+	-		+	+
13	Gatra Sada	-	+	-		+	+
14	Gadgadatvani	-	+	+	-	-	-
15	Alpa Prana	-	+		-		+
16	Sarva Kriyasu Asamarthata	-	+	-	-	+	+

17	Alpa Vyavaya	-	+	-	-	+	+
18	Kasa	-	+	-	+	-	-
19	Shwasa	-		+	+	-	-
20	Snigdhangatao	-	+		+	-	-
21	Udaraparshva Dushti	-	+	-	+	+	+
22	Chala Sphik	+	-	+	+	+	+
23	Chala Udara	+	-		+		
24	Chala Stanah	+	-	+	+	+	+
25	Ayathopagayotsaho	+	-	+	-	+	+
26	Ama	_	_	_	_	_	_
27	Moha			_	_	+	+
28	Sukumarata	+	+	_	_		_
29	Anga Shaithilya	+	+	_	_	+	+

4.4. Signs and Symptoms during the Progress of Meda Dhatu Dushti:

From the above (table 5) it may be conjectured that all the signs and symptoms of *Medo Dhatudushti* do not manifest at a time in an individual, rather they are seen in different stages of the disease. Again, some symptoms may be seen only in few patients and in some patients, they may manifest as an *Upadrava*.

The signs and symptoms of different stages of *Medo Dushti* have been discussed below:

First Stage of *Medo Dushti*:

The symptoms of this stage indicate the possibility of development of the *Medo Dushti* in future. It comprises of:

- Snigdhata (Unctuousness of the body)
- ❖ Guruta (Heaviness or increased body weight
- Utsahahani (Lack of enthusiasm
- ❖ *Shithilata* (Looseness of the body):
- ✓ Daurbalya (Weakness)
- ✓ *Kshudra Shwasa* (Dyspenoea on exertion)

Second stage of *Medo Dushti*:

The symptoms appearing after the first stage and persist for a pretty long time till the complete manifestation of the disease but cannot be considered as the cardinal symptoms of this disease are included under this stage.

This stage comprises the symptoms like:

- Nidradhikya (Excessive sleep)
- Kshudhadhikya (Polyphagia)
- Trishnadhikya (Polydipsia)

- ❖ *Sweadadhikya* (Excessive perspiration):
 - ✓ Daurgandhata (Emit of bade smell from the body)
 - ✓ *Alpa Vyauaya* (Lack of indulgence in sexual intercourse)
 - ✓ Alpa Prana, Daubalya, Moha

Third stage of Medo Dushti:

In this stage the patient becomes pitiable. The cardinal sign and symptoms are fully manifested in this stage. These are:

- ❖ *Udara Vriddhi* (Distention of the abdomen)
- ❖ Chala Sphik Udara Stanah (movement of abdomen, buttock and breast)

4.5. Complications of *Medo Dhatu Dushti*:

The disease or diseases which occur concurrently with the main disease is known as *Upadrava* that can be automatically cured only by the treatment of the main disease. So generally, it does not need any specific treatment. But if the *Upadrava* is more severe and of higher intensity; it's separate treatment is required. Like other diseases, if *Medo Dushti* is not treated properly in proper time, it leads to so many complications which may be injurious to life. *Charaka* has not described the *Upadravas* of *Medo Dushti* separately but he has reported that if *Medo Dushti* person is not treated properly, can be subjected to many diseases of serious nature. In other ayurvedic texts so many diseases are mentioned which arise out as a complication of *Medo Dushti* (Table 6).

Table No. 6: Upadravas of Medo Dhatudushti

Sr. No.	Upadravas	SU	AS	AH	YR	BH	MN
1	Prameha	-	+	+	+	+	-
2	Pramehapidika	+	+	-	-	-	+
3	Jwara	+	+	+	+	+	+
4	Bhagandara	+	+	+	+	+	+
5	Vidradhi	+	-	-	-	-	+
6	Vatavikara	-	-	-	-	-	+
7	Dararoga	-	+	+	-	-	-
8	Urustambha	-	+	+	-	-	-
9	Shwasa	-	+	+	-	-	-
10	Apachi	-	_	+	+	+	-
11	Kasa	-	-	-	+	+	-
12	Kushtha	-	-	-	-	+	-
13	Visarpa	-	-	-	-	+	-
14	Atisara	-	-	-	+	+	-
15	Arsha	-	-	-	+	+	-
16	Shlipada	-	-	-	+	+	-

17	Kamla	-	-	-	+	+	-
18	Jantavah (Krimi)	-	-	-	-	+	-
19	Mutrakircchra	-	-	-	-	-	-
20	Amaroga (Ajirna)	-	-	-	-	-	-

Apart from the pitiable condition of the patient, the *Medo Dhatudushti* leads to mechanical disabilities and predisposes to metabolic and cardiovascular disorders.

4.6. Prognosis (Sadhyasadhyata)

In the Ayurvedic literatures, no *Acharya* has mentioned the *Sadhyaasadhyata* of *Medo Vridhi*, but it has great value in the field of treatment.

The subject with a reference from the classics that out of the two persons i.e., *Krisha* and *Sthula*, the *Krisha* persons are supposed to be ideal for treatment. The reason behind this statement is that there is a big range or drugs for choice and a big range of *Aharakalpanas* which can be easily selected for treating such persons. Similarly, very troublesome procedure is also not to be adopted in the treatment of *Krisha* persons. But there is a very limited choice of drugs and diets for *Sthula* persons. Similarly, to reduce the extra weight and obesity various troublesome procedure are to be adopted which often are contraindicated. In such persons even the intake of water itself acts as if some *Sneha* has been consumed and helps in going the weight. Therefore, if obesity or *Medo Dhatudushti* is not curable easily at least it is *Kashta Sadhya*.

The *Medo Dhatudushti* patients, afflicted with all the *Doshas* transcend all the therapeutic devices, involving all the *Margas* and having the severe complications for long time are incurable.

The Medo Dhatudushti caused by Beejadhosa is always incurable.

4.7. Management

Treatments which reduce *Medas* (fat), *Anila* (vata) and *Shleshmana* (*Kapha*) are desirable (re quired)⁶.

Use of *kulattha*, *Shyamaka*, *Yava*, *Mudga*, and honey water; indulgence in worry, purification therapies, avoidance of sleep.

Either *Triphala*, *Guduchi*, *Abhaya* or *Ghana*, should be licked with honey daily; either *Rasanjana*, *Mahat Panchamula*, *Guggulu* or *Shilajatu*, along with the fresh juice of *Agnimantha* is suitable; powder of *Vidanga*, *Nagara*, *Yavakshara* and iron filings or powder of *Yava* and *Amalaka* along with honey should be licked daily.⁷

⁶ Paradkar HS, editor Vagbhata, Ashtanga Hridaya. Sutra Sthana. Sarvangasundara commentary of Arunadatta and Ayurvrdarassayana commentary of Hemadri, Sanskrit Version.Ch.14. Ver.21. Reprint edition, 2006. Varanasi: Chaukhamba Krishnadas Academy, Pg. 228.

⁷ Pt H.S. Paradkar editor Vagbhat, Ashtanga Hridaya. Sutra Sthana. Sarvangasundara commentary of Arunadatta and Ayurvrdarassayana commentary of Hemadri, Sanskrit Version.Ch.14. Ver.22, 23, 24. Reprint edition, 2006. Varanasi: Chaukhamba Krishnadas

Prevention:8

- Quit smoking.
- The intake of saturated fats and cholesterol should be reduce.
- Fibre diet.
- Exercise regularly.
- Manage stress.
- In appropriate level body weight should be control.
- Medical checkups should be done regular.

5. DISCUSSION

Dyslipidemia is a condition with abnormal raised levels of cholesterol and triglyceride in the blood, which leads to risk factor for the coronary artery diseases⁹, can be correlated with the *Medoroga* in Ayurveda, which is a *Santarpajanya vyadhi* mainly caused due to consumption of *Kaphaja Ahara*, *Diwaswapna* and inadequate physical activities (exercise), which inturn leads to incomplete processing of *Anna Rasa* (consumed food); get converted into *Ama dosha*¹⁰, which leads to *Medo dhtavagni Mandyata*, *Medovaha Srotodushti* and accumulation of *Apakwa Medas*. Similar to *Medoroga*, faulty diet (which are high in saturated fat and cholesterol), lifestyle and hereditary factors are the major etiological factors for Dyslipidemia.

For deciding line of treatment of *Medadhatu dushti* (Dyslipidemia), it is necessary to understand etiological, pathological and therapeutically aspects as per Ayurveda. Dyslipidemia treatment should be also planned accordingly for achieving *Dhatusamya*. *Nidana* of Dyslipidemia vitiates *Jatharagni*, *Rasa Dhatwagni*, *Mamsa Dhatwagni*, *Meda Dhatwagni* and increase *Ama*, *Kapha*, *Kleda*, *Apakva Rasa*, *Abaddha Meda* and *Mamsa* in the body. Hence, the first aim of the treatment is to correct *Jatharagni*, *Rasa Dhatvagni*, *Mamsa* and *Meda Dhatvagni*, and then to remove excessive *Ama*, *Kapha*, *Kleda*, *Meda* and *Apakva Rasa* from the body. It is also necessary to restore the normal function of above mentioned *Agni*, *Dosha*, *Dhatu* for constant normal function.

6. CONCLUSION

Dyslipidemia (*Medadhatu dushti*) can be prevented / corrected by following the *Nidana parivarjana* i.e. faulty diet and sedentary lifestyle which are the main culprit for the disease. The treatment protocols speculated in *Charaka Samhita* are meticulous and incorporating different treatment modalities/*Upakramas* based on the fundamental principles of Ayurveda should applied for achieving *Dhatusamya* and restoring the normal function of *Agni*, *Dosha*, *Dhatu*.

Academy, Pg. 226.

⁸ http://www.who.int/bulletin/volumes/89/2/10-079947/en last accessed on 24/5/2021.

⁹ Pooja BA, Bhatted S, Chaturvedi N, Deekshit S, Bhojani MK. Role of atorvastatin in dyslipidemia: a clinical study. Indian J Clin Practice. 2013; 24(7): 620-622.

¹⁰ Singhal GD. Ayurvedic clinical diagnosis based on Madhava Nidana, Part II. Chowkhamba Sanskrit Pratishthan: Delhi; 1996. p. 593-594 (Chapter 34, verse 34.1-2/1, 34.2/2-4).

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

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COMPETING INTEREST

Authors have declared that no competing interest exist.

REFERENCE