



## Management of Chemotherapy and Radiotherapy-Induced Side Effects in Pancreatic Carcinoma Through Panchagvy and Other Shamana Chikitsa in Ayurveda - A Case Report

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**Abstract:** Pancreatic cancer is a carcinoma with a poor prognosis due to a high mortality rate. There are 10 cases in the 1,00,000 population per annum. Surgical intervention, Chemo & radiotherapy are the conventional measures to treat these conditions. However, due to the specific side effects of Chemo & radiotherapy, search strategies for the Safest Ayurvedic intervention are highly needed. The prime aim of this paper is to study the efficacy of Ayurvedic treatment in managing the side effects of Chemotherapy in pancreatic Carcinoma of a male patient. In a single case study, a patient diagnosed with CA Pancreas was advised for Chemo-Radiation therapy. However, the severity of the complaints, such as Anorexia, nausea, vomiting, and epigastric pain, worsened after one of Chemotherapy & remained throughout the day. Despite taking the antacid suggested by the oncologist, there was no relief in symptoms. Therefore, a patient approached Ayurvedic Chikitsa. Shamana Ayurvedic Chikitsa (Praval Pishti, Gulvel Satva, Suvarna Sootshekhar Rasa, Moutikta Kamdudha & Chandrakala Rasa) for six consecutive months was prescribed. After 3-5 days, the patient has observed significant relief in the above symptoms & he was able to take his regular diet. The frequency of vomiting was also reduced significantly. After six months of standard treatment, his weight also improved. Three sittings of Chemo & radiotherapy were completed without any hurdles & no associated side effects. The selected combination of all Ayurvedic medicines induces relief in symptoms due to their Agnidipak, Vata-Pitta Shamak Chhardighna, Yakrutotejjak & Rasayana properties. In the present case report, the above said Ayurvedic prescription significantly induces relief in side-effects of Chemo & radiotherapy due to its Pitta Shamak & Agnivardhaka effects.

**Keywords:** Pancreas, Carcinoma, Ayurvedic, Palliative, Pitta Shamak, Agnivardhak

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**I. INTRODUCTION**

Pancreatic cancer is a carcinoma with a poor prognosis due to a high mortality rate. Adenocarcinoma, or ductal carcinoma, is the most prevalent form of pancreatic cancer, making up more than 90% of all diagnoses<sup>1</sup>. There are 10 cases in 1000000 populations per annum. Its incidence is increased in males, especially those older than 60 years. Among the current faulty lifestyle, a non-vegetarian diet & addiction to cigarettes & alcohol are the main culprit for developing this disappointing clinical condition<sup>2,3</sup>. It is a challenge for oncologists due to the least survival rate, high surgical cost, & less effective measures. However, many conventional measures, including Chemotherapy, radiotherapy, etc., are commonly used in practice for conservative purposes<sup>4</sup>. However, these are highly associated with a chain of various side effects, e.g., Anorexia, nausea, vomiting, gastric trouble, severe fatigue, hair loss, skin changes, tenderness, shortness of breath, etc.<sup>5</sup> Their intensity also varies with the person's constitution along with its lifestyle, the extent of the pathology of the disease, involvement of organs or systems in the body<sup>6,7</sup>. Palliative care is the emphasis on treatment when pancreatic cancer has advanced, and these treatments are unlikely to be beneficial. Palliative care aims to keep you as comfortable as possible for as long as possible<sup>8-10</sup>. The Whipple procedure, also known as a pancreaticoduodenectomy, is the latest treatment for managing pancreatic carcinoma; however, it is highly invasive<sup>11</sup>. It removes malignancies from the head or neck of the pancreas. A surgeon's goal during this procedure

is to eliminate any potential disease from the area surrounding the pancreas and then reconnect all the structures to improve the function of the digestive system<sup>12</sup>. Patients with pancreatic cancer with higher levels of carbohydrate antigen 199, neutrophil-lymphocyte ratio, lymph node metastasis, and distant organ metastasis have a worse prognosis<sup>13</sup>. Therefore, early identification, early radical surgery, and adjuvant treatment are required<sup>14</sup> to enhance the prognosis for this fatal disease. Pancreatic cancer is deadly because it is difficult to detect at an early stage and can be difficult to cure. This is because pancreatic cancer tumors don't react to standard cancer medicines as effectively as other, less deadly types of cancer<sup>15</sup>. Therefore, it is highly essential to search for alternative remedies in our holistic science, i.e., *Ayurveda*, to overcome these limitations. As *Ayurveda* is the science that deals with the root cause of pathology effectively and safely. Most symptoms described under the term side effect of Chemo and radiotherapy have *Vata* & *Pitta* predominance as per *Ayurveda's* perspective<sup>16</sup>. Therefore, especially *Pitta Shamaka, Chikitsa* becomes helpful in managing such symptoms. The prime aim of this paper is to explore the efficacy and safety of *Ayurvedic* treatment in the management of Chemotherapy and radiotherapy-induced Side effects in pancreatic Carcinoma of a male patient. The objectives of this paper include the non-invasive and efficient role of *Ayurveda* in overcoming chemotherapy and radiotherapy side effects. The present study demonstrates the promising & significant role of *Ayurveda* in managing these side effects.

**2. MATERIALS AND METHODS**

It is a single case study; therefore, CARE Format was used for writing this case study.

**2.1. Patient Information**

Table 1: Demographic detail of the patient	
Name:- A.B.C.	Occupation:- Clerk
Sex:-Male	Marital status:- Unmarried
Age:- 45Years	Education:- M.A.
Address:-Wardha	Socioeconomic status:-Upper Middle Class
Phone no:- *****1243	O.P.D. No:- 1907061155

Forty-five years' male patient residing in Wardha, Maharashtra, was diagnosed with Carcinoma (C.A.) Pancreatic head on 29/05/19. The demographic detail of the patient is given in table no.1.

Table 2: Chief complaints			
S.No	Complaints	Intensity	Duration
1	Anorexia (loss of appetite)	5+	Since two months
2	Epi-gastric pain	3 +	
3	Nausea	5+	
4	Vomiting (With an empty stomach & after intake of any liquid or solid food)	5+	
5	Lassitude (General weakness)	5+	
6	Weight loss	5+	
7	Constipation	4+	

The patient's chief complaints are mentioned in table no.2. He was advised for Chemotherapy & radiotherapy at Tata Memorial Hospital, Mumbai. After the intervention of the first Chemo, the patient complained of severe nausea, severe aversion to food, nausea, constant epigastric pain, and vomiting with an empty stomach. After intake of even one bout of food or liquid also & therefore, his intake of food was stopped entirely. Due to impairment in nutrition, weight loss

was highly aggravated & severe lassitude was there. Even the patient couldn't do his day-to-day activity also. The patient became quite irritable. No relief of the above symptoms was obtained even after taking the antacid suggested by his treating oncologist. Therefore, the patient was approached at Mahatma Gandhi *Ayurved* Hospital, Wardha. As a single case study, the *Ayurvedic* prescription was started on 1/06/19 after taking his written informed consent. The ethical

clearance for the publication of this case study was taken from the local ethical committee at Mahatma Gandhi Ayurved College, Hospital and Research Centre, Salod(H), Wardha, with IRB No. MGAC/IEC/April / 2023/ 76. All procedures and treatments advised and performed in this study were conducted by ethical standards mentioned in the

1964 Declaration of Helsinki, as revised in 2013. During this treatment, his total three sittings of Chemotherapy & radiotherapy were completed without any trouble to the patient. Moreover, a satisfactory outcome was observed in the patient's clinical symptoms & quality of life also.

## 2.2. History

**Table3: History of patient**

S.No	Nature of History	Findings
1	Past medical history	<ul style="list-style-type: none"> <li>K/c/o/HTN (On regular Rx Telimikind H -40 mg I O.D.)</li> <li>Bilateral lower renal calculus &amp; right upper ureteric calculus</li> <li>Weight loss for two months</li> </ul>
2	Personal history	<ul style="list-style-type: none"> <li>Diet: Mixed (Especially frequent intake of spicy &amp; non-veg diet with irregular time intervals)</li> <li>Addiction: Smoking daily &amp; alcohol weekly thrice</li> <li>Sleep: Late night awakening, awakening late in the morning</li> <li>Occupation: Sedentary</li> </ul>
3	Drug History	<ul style="list-style-type: none"> <li>Telimikind H -40 mg I O.D.</li> </ul>
4	Family history	<ul style="list-style-type: none"> <li>Father-Death due to M.I.</li> <li>Mother: K/C/O HTN, IHD/DM</li> <li>Siblings: Normal</li> </ul>

The details of the history of the patient are given in Table no.3. Among various heads of history, the past medical history of the patients suggests the obstructive and *Piita-Rakta* Predominant pathology in the body, that is, a favorable condition, i.e., *Strotoviagunya* in the body for the pathology of clinical conditions in future. It also favors the vitiation of the Agni factor, which is again contributed by the specific dietic history of the patient in the form of spicy & non-veg diet with irregular time intervals) i.e., *Vishamashana*, as per Ayurveda's perspective.

## 2.3. Ethical statement

Written consent was received from the patient for publishing this case study. The ethical clearance for the publication of this case study was taken from the local ethical committee at Mahatma Gandhi Ayurved College, Hospital and Research Centre, Salod (H), Wardha, with IRB No. MGAC/IEC/April /

### 2.4.2. Ashtavidha Pariksha

The details of *Ashtavidha Parikshana*, the patient, are depicted in Table No. 4.

**Table 4: Ashatavidha Parikshana**

S.No	Head	Observation	S.No.	Head	Observation
1	Nadi (Pulse)	88/min (Vata-Pittaja)	5	Shabda (Speech)	Spashta (Clear)
2	Mala(Stool)	Unsatisfactory (Irregular)	6	Sparsha (Touch)	Samshitoshna (Normal)
3	Mutra(Urine)	Samyak(5-6 /day, 2 3 times/night)	7	Druk (Vision)	Good
4	Jivha(Tongue)	Nirama	8	Akruti (Built)	Krush

Among *Ashatavidha Parikshana*, Mala(Stool) was abnormal as irregular in frequency and hard stool. The rest of the heads were normal. The patient's build was lean as the patient's nutrition was grossly hampered due to the pathology of the disease itself, and gastrointestinal symptoms occurred due to Chemo and radiotherapy.

2023/ 76. All procedures and treatments advised and performed in this study were conducted by ethical standards mentioned in the 1964 Declaration of Helsinki, as revised in 2013.

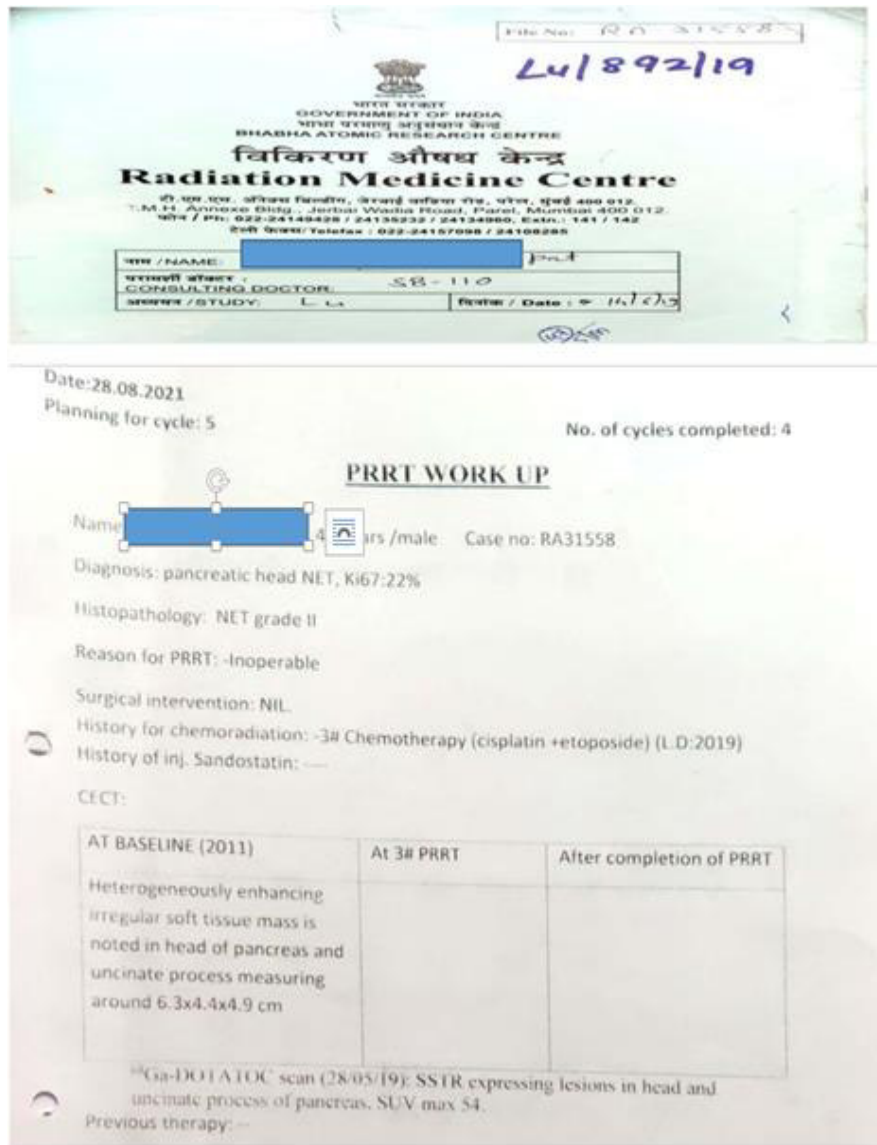
## 2.4. Clinical Findings (Clinical examinations of the patient)

### 2.4.1. General examinations of the patient

- The patient's general condition was poor, afebrile, and conscious but irritated on examination.
- No Jaundice /Ascites/ Hepatomegaly/Splenomegaly
- Severe Anemia was there
- Blood pressure 130/90 mm of Hg
- Weight 55 kg
- Prakriti-Vatapradhana Pittaj*

## 2.5. Diagnosis

A Diagnostic Assessment of the patient was done based on the subsequent investigations detected in image no.1.



**Fig 1: Diagnosis Report of the Patient**

- **C.E.C.T. Abdomen:** Heterogeneously enhancing irregular soft tissue mass in the head of the pancreas and uncinete process measuring around 6.3\*4.4\*4.9 cm
- **Histopathology:** N.E.T. Grade II Pancreatic head carcinoma
- **<sup>68</sup> Ga-DOTATOC scan (28/05/19):** S.S.T.R. Expressing lesions in the head and uncinete process of the pancreas, S.U.V. max 54
- No surgical intervention has been done

**Final Diagnosis:** Pancreatic head N.E.T. Carcinoma (Chemotherapy and Radiotherapy-induced side- effects)

**2.6. Prognosis**

The combined five-year survival rate for pancreatic cancer, or the proportion of all patients still alive five years after diagnosis, is quite low, just 5 to 10%, compared to many other malignancies.

**2.7. Treatment Plan/ Intervention**

Palliative treatment in Panchagvya and other Shamana Chikitaa was prescribed: Details of preventive, palliative therapeutic intervention are mentioned in Table 5.

**Table 5: Details of preventive, palliative therapeutic intervention**

S.No	Medicine	Dose	Frequency	After drink	Duration
1	Praval Pishti	15 gms			
2	Guduchi Satva	20gms			
3	Suvarna Sootshekhar Rasa	10 tabs	Make 30 equal doses by adding them all together in a given proportion	1 Dose every three hourly	Dadimavaleha 15 ml every time
4	Moutikta Kamdudha	20 tabs			
5	Chandrakala Rasa	40 tabs			

6	Avipattikar Powder	10 gms	H.S.	Lukewarm water	for one month only
7	Panchagvya Ghrita	5 gms	twice daily	Before food	3 Months
8	Gomutra Arka	5ml	twice daily	7 a.m.-5 p.m.	One month only

### 3. RESULTS & OBSERVATIONS (FOLLOW-UP AND OUTCOMES)

**Table 6: Therapeutic outcome Before, After treatment, and follow-up**

S.No	Symptoms	Before Treatment	After 15 days	After three months	After six months
1	Anorexia (loss of appetite)	5+	2+	Absent	Absent
2	Epi-gastric pain(VAS)	3 +	Absent	Absent	Absent
3	Nausea	5+	1+	Absent	Absent
4	Vomiting (With an empty stomach & after intake of any liquid or solid food)	5+	Absent	Absent	Absent
5	Lassitude (General weakness)	5+	1+	Absent	Absent
6	Constipation	4+	Absent	Absent	Absent
7	Weight loss	Weight loss by 20 kg	1 Kg	5Kg	15

The therapeutic outcome of the patient is given in Table No. 6. The improvement of the quality of life of the patient is described in table no.7. The prescribed Ayurvedic treatment mentioned above was continued for six consecutive months (even three months after his course of Chemo & radiotherapy).

**Table 7: Improvement of Quality of Life (WHO)**

S.N.	Quality of life domains	Before Treatment	After three months	After six months
		April 2019	July 2019	October 2019
1	Well-being at the Emotional level	4	29	35
2	Well-being at the Functional level	2	24	39
3	Well-being at the Physical level	1	27	40
4	Well-being at the Social level	7	19	38

During this treatment for 6 months, his total three sittings of Chemotherapy & radiotherapy were completed without any trouble to the patient. Moreover, a satisfactory outcome was observed in the patient's clinical symptoms & quality of life. After regular treatment for consecutive 6 months, the patient has become completely symptoms free.

### 4. DISCUSSION

In pancreatic Carcinoma, which occurs commonly in males & the regular consumption of tobacco and alcohol, is the chief risk factor for developing pancreatic cancer. These factors were the main etiological factors in the present case study. The intake of food at irregular intervals (*Vishamashana*) and excessive intake of unhealthy diets such as the Non-vegetarian diet ultimately disturb the secretion of various secretions of digestive juices secreted from the exocrine part of the pancreas. It results in *Agnimandya*. Moreover, additional vulnerable effects of addictions induced damage to pancreatic cells, which turn into carcinomatous changes. All these factors lead to the Vitiating of *Annava* & *Rasava* *Strotas* & generate *Annava Strotodushiti Lakshana's* symptoms, e.g., Anorexia, Nausea, vomiting, pain in the epigastric region, which are worsened by intake of any food. Disturbances & vitiating of *Kledaka Kapaha*, *Pachaka Pitta* & *Saman Vayu* is responsible for developing the above symptoms<sup>17</sup>. All these symptoms get aggravated again due to Chemotherapeutic agents, which induce gastritis by their irritation effect over gastric mucosa. Anorexia is the most typical side effect of Chemotherapy<sup>18</sup>. It is highly associated with weight loss, fatigue, and decreased appetite, reducing chances of a better outcome and diminished survival<sup>19</sup>.

Anorexia can be correlated with *Arochak*, according to *Ayurveda*. This patient may not perceive food taste or develop an aversion to food. Impaired *Vata* (*Prana*, *Udana*, and *Samana*) and *Pitta* (*Pachak Pitta*), *Kapha* (*Bodhak Kapha*) at the level of the stomach leads to depletion in a digestive fire that turns into tastelessness. Nausea and vomiting are the most common side effects occurring during chemo-radiotherapy. Despite the use of anti-emetic drugs, 70% of patients show persistent intensity of symptoms. It can be correlated with *Pittaj Chhardi*<sup>20</sup>. It is essential to use medications considering all these scenarios of pathogenesis and the nature of symptoms that correct *Agnimandya* due to their *Yakrutotejaka*, *Pitta Shamak*, but *Agnidipaka* nature, *Chhardighna* & *Rasayana* properties<sup>21</sup>. By considering this fact, a specific treatment plan was planned, which can be justified as follows: Both *Pravalpanchamruta* & *Kamdudha* (*Mouktikyukta*) consists of *Amruta Satva*, *Kapadrik Bhasma*, *Abhraka Bhasma*, *Mouktik* & *Praval Pishti*, *Swarna Bhasma*, *Suvarna Gairik* balance the *Pitta* & controls gastritis induced by the chemotherapeutic agent<sup>22</sup>. *Guduchi Satva* is an excellent medicine that corrects *Agnimandya* due to its *Agnidipana* and *Amahara* properties. It pacifies vitiating *Pitta* by its *Dahahara*, carminative & antipyretic properties. It restores *Agnimandya* at the *Dhatu* level due to its *Rasayan*, anti-toxic, anti-inflammatory, anti-oxidant, immune-modulatory & hematogenic properties<sup>23</sup>. *Suvarna Sootshekhara Rasa* is a herbo-mineral combination of purified *Parad*, Purified *Gandhak*, *Chaturjat*, *Shankh Bhasma*, and *Suvarna* (Gold) *Bhasma*. It helps to relieve hyperacidity, nausea, and vomiting, i.e., symptoms of gastritis<sup>24,25</sup>. *Chandrakala Rasa* is also a herbo-mineral combination having *Pitta Shamak* property<sup>26</sup>. *Dadimavaleha* was used as *Anupana* in this case, which enhances the *Pitta Shamaka* effect &



palatability of the given *Ayurvedic* combination. It has multiple products such as anti-emetic, appetizer, and *Dipana- Pitta Shamak*, which reduces gastritis symptoms. Moreover, it is *Balya-Bruhana*, *Santarpana*, in nature due to its *Madhura Rasa*. Due to the *Chhardighna* property of *Dadima*, it reduces the frequency of vomiting<sup>27</sup>. *Avipattikar* powder is used for *Mrudu Virechanato* regularize *Pitta*<sup>28</sup>. It smoothly clears the large and small intestines without inducing excessive weakness due to the *Sukhvirechak* property of *Trivrutta*. Considering the less physical strength of the patient, it was selected for *Mrudu Shodhana*. It has *Pitta Prasadana* property; it activates the liver, gallbladder, spleen, and pancreas & induces their purification, rejuvenation, and restoration of their functions. *Gomutra Arka* relieves nausea by decreasing the excess *Drava Guna* of *Pitta*, corrects the *Kledak Kapha Dushti*, due to *Kaphaghna* properties, improves appetite *Agnidipaka* in nature (appetizer), and is also useful in *Granthi & Arbuda* due to *Kaphaghna* & anti-cancer properties<sup>29,30</sup>. *Panchagavya Ghrita* used for both *ShamanSnehapana* & *Matra Vasti* pacifies the *Pitta* and *Kapha*, enhances the effects of *Shamana* Drugs, and checks over free radical formation as a result of the Anti-oxidants effect due to anti-cancer properties & vitamins A, C, and E, fatty acids present<sup>31,32</sup>. The above-said combination of all *Ayurvedic* medicines helps correct the pathology of the primary disease. It nullifies the side effects of Chemotherapy by protecting the structure and function of the pancreas and various organs in the G.I. system. It also helps in natural tumor regression, revives the regeneration of the new cells, prevents the spread of disease, increases patient survival, and relieves symptoms in patients with improvement in the patient's quality of life. *Pittashamak* and *Vatanulomak* Nature, Anti-oxidants nature, Immunomodulator properties, and Carminative properties of *Panchagavya* formulations like *Gomutra Arka* and *Panchgavya Ghrita* correct the process of free radical formation. Anti-cancer, Anti-oxidant potential of *Panchagavya* products is already proved by Athavaleet *al.* (2012), Arumugam DG *et al.* 2019, Rita R *et al.* 2011, Bahuleyan V. P (2011), Pravesh *et al.*, (2011), Arumugam DG, *et al.* 2019, Rita R. *et al.* 2011 and

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Dhama K *et al.* 2005. In a nutshell, all planned treatment nullifies the side effects of Chemo and radiotherapy therapy by

- Protecting the structure and function of the pancreas as well as various organs in the Gastro-intestinal system
- Rejuvenating the health of the pancreas by reviving the regeneration of the new cells
- Preventing the spread of disease
- Increases patient's survival with improvement in the patient's quality of life<sup>33</sup>.

## 5. CONCLUSION

This case study proves the significant role of *Ayurveda* in the successful management of the side effects of Chemotherapy. Based on this successful outcome of *Ayurvedic* intervention in pancreatic Carcinoma, the planning of further clinical trials with a large sample size in the future is necessary. In addition, it will open a new branch of *Ayurveda* to study its efficacy in oncology.

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## 7. AUTHORS' CONTRIBUTION STATEMENT

Both authors contributed to writing this Case study. Dr. Gaurav Sawarkar made the primary draft of the article and the final manuscript. *Dr. Punam Sawarkar advised Panchagavya* and other *Shamana Chikitsa*, and she also assessed the patient (before and after treatment).

## 8. CONFLICT OF INTEREST

Conflict of interest declared none.

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