Can We Use *Terminalia Arjuna (Roxb.) Wight and Arn* in Place of Novel Oral Anticoagulants (NOACs) in Post-COVID-19 Cardiac Conditions?

Journal of Pharmacology and Pharmacotherapeutics
13(1) 95–96, 2022

DOI: 10.1177/0976500X221080202
journals.sagepub.com/home/pha
SAGE

Shridhar Dwivedi[1], Vinod Sharma[1] and C. R. Patil[2]

Received 22 July 2021; **revised** 19 December 2021; **accepted** 10 February 2022

Dear Editor,

COVID-19 is known to cause several cardiac disorders such as pancarditis, coronary artery disease (CAD), arrhythmias, cardiomyopathy, and stroke during and after the active stage of the COVID-19 infection, even when the subjects turn to be real-time polymerase chain reaction (RT-PCR) negative. Factors like age above 45 years and comorbidities such as diabetes, hypertension, CAD, and/or thyroid disorders increase the risk of post-COVID-19 complications. In such post-COVID-19 patients, novel oral anticoagulants (NOACs) and beta-blockers are prescribed as preventive measures.

We recently had a 47–year–old post-COVID-19 male who developed a severe episode of palpitation after six weeks of infection subsidence. He had a history of suffering from atrial fibrillation about 10 years back, which had responded to Cordarone. He was off Cordarone for the last eight years. An electrocardiogram (ECG) was taken which revealed the recent atrial fibrillation. Holter monitoring showed an episode of ventricular tachycardia. Echo was unremarkable without any valvular or regional wall motion abnormalities. Considering his recent COVID-19 and recurrence of atrial fibrillation, he had been put on Cordarone, beta-blocker, and aspirin. With regard to using a NOAC in this case, we decided to administer bark powder of the Indian medicinal plant *Terminalia arjuna (Roxb.) Wight & Arn (Arjuna)* 500 mg three times a day (TID) instead, which has been demonstrated to have antiarrhythmic, anti-inflammatory, anti-ischemic, and antioxidant properties. The patient reported relief in palpitation following above drugs within 48 h of the drug intake.

Such use of *Arjuna* can be supported by considering the prior preclinical and clinical trials.[1,2] The in *vitro* antithrombotic effects of *Arjuna* are reported in 20 patients with CAD. This effect was attributed to the desensitization of platelets and/or transduction mechanisms involved in thrombosis.[3] Another randomized controlled clinical trial in diabetic patients has revealed significant inhibition of platelet aggregation induced by *Arjuna*. In the CAD patients, one-month administration of *Arjuna* significantly reduced the platelet count. This may have therapeutic significance in preventing post-COVID-19 thrombotic events.[4] As estimated in a randomized controlled clinical trial (n = 105) in CAD patients, the antioxidant effect of *Arjuna* (500 mg) was found to be comparable to Vitamin E (400 IU).[5]

The evidence of the efficacy of *Arjuna* is found also in the preclinical investigations. *Arjuna* contains triterpenoids, flavonoids, and glycosides, known to interact with the angiotensin converting enzyme-2 (ACE2), which plays a crucial role not only in the SARS-CoV2 infection but also in the post-COVID-19 complications. The *Arjuna* bark extract contains 1.08% quercetin and 0.16% rutin along with β-sitosterol.[6,7] All these compounds interact with the ACE2 and modulate it. In the rat model of myocardial ischemia/reperfusion injury-induced arrhythmias, quercetin is proved to exert protective effect.

Arjuna bark extract also contains potent antioxidant polyphenols such as gallic acid, gallocatechin, epigallocatechin, catechin, and epicatechin. The antioxidant effects of these constituents may provide protection against the oxidative stress associated with the post-COVID-19 complications.

All these evidences and our case report strongly suggest that *Arjuna* bark extract may provide therapeutic benefits as an adjuvant to the ongoing therapy. It may be considered in place of the NOACs as a well-proven alternative, providing

[1] Department of Cardiology, National Heart Institute, Community Center, East of Kailash, New Delhi, Delhi, India

[2] Department of Pharmacology, Delhi Pharmaceutical Sciences and Research University, Pushpvihar, New Delhi, India

Corresponding author:
C. R. Patil, Department of Pharmacology, Delhi Pharmaceutical Sciences and Research University, Sector 3, Pushpvihar, New Delhi, Delhi 110017, India.
E-mail: crpatil@dpsru.edu.in

multiple therapeutic advantages rather than just anticoagulating effects.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

References

1. Dwivedi S. *Terminalia arjuna* Wight Arn. A useful drug for cardiovascular disorders. *J Ethnopharmacol* 2007; 114(2): 114–129.
2. Dwivedi S and Chopra D. Revisiting *Terminalia arjuna* - an ancient cardiovascular drug. *J Tradit Complement Med* 2014; 4(4): 224–231.
3. Pingali U, Fatima N, Nizampatnam M. Evaluation of *Terminalia arjuna* on cardiovascular parameters and platelet aggregation in patients with type II diabetes mellitus. *Res J Life Sci* 2013; 1: 7–12.
4. Priya N, Mathur KC, Sharma A, et al. Effect of *Terminalia arjuna* on total platelet count and lipid profile in patients of coronary artery disease. *Adv Hum Biol* 2019; 9(1): 98–101.
5. Khan SL and, Falak A. Siddiqui beta-sitosterol: As immunostimulant, antioxidant and inhibitor of SARS-CoV-2 spike glycoprotein. *Arch Pharmacol Ther* 2020; 2(1): 12–16.
6. Liu X, Raghuvanshi R, Ceylan FD, et al. Quercetin and its metabolites inhibit recombinant human angiotensin-converting Enzyme 2 (ACE2) activity. *J Agric Food Chem* 2020, November 25; 68(47): 13982–13989.
7. Jani V, Koulgi S, Uppuladinne VNM, et al. An insight into the inhibitory mechanism of phytochemicals and FDA-approved drugs on the ACE2-Spike complex of SARS-CoV-2 using computational methods. *Chem Zvesti* 2021, May 8: 1–24. DOI: 10.1007/s11696-021-01680-1.