Background: Ticagrelor is an antiplatelet administered orally and classified as cyclopentyltriazolopyrimidine, which binds inversely to P2Y12 receptors. Unlike prasugrel and clopidogrel, ticagrelor does not require metabolism activation. Thus, in theory, it lacks the variability seen with CYP polymorphisms and thus produces a more stable antiplatelet effect. However, clinical and laboratory experiments showed some defects in the P2Y12 receptor antagonism of Ticagrelor. Most of its variable platelet reactions are unexplained, despite knowledge of several genetic and non-genetic factors, which pose as challenges to the personalization of Ticagrelor therapy. Pharmacometabonomics which is a process of discovering new biomarkers of drug response or toxicity in biofluids into predicting drug response have been exploited to predict drug response.

The advantage of pharmacometabonomics is that it not only predicts the response but provides comprehensive information on metabolic pathways which are implicated by the response. Integrating Pharmacogenetics with pharmacometabonomics provides insight into unknown genetic in addition to nongenetic factors related to the response.

Method: The current study reviewed the literature related to the factors that are associated with variable platelets reactivity to Ticagrelor and evaluated the current methods employed to personalize Ticagrelor therapy.

Result: This review found that currently, pharmacometabonomic techniques are not used to predict the response to Ticagrelor. It also shows that there are limitations to the use of pharmacogenetics alone to assess the response to Ticagrelor.

Conclusion: This review identifies that integration of pharmacogenetics with pharmaco-etabonomics approach can be used to predict Ticagrelor's outcome.