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# Investigation of the Pharmacokinetics of Anticoagulant Drugs Administered as Oral Solid Dosage Forms in Different Patient Populations

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**Abstract:** *Anticoagulant therapy plays a crucial role in the prevention and treatment of thromboembolic events, yet its efficacy and safety profiles can vary significantly across patient populations. This study aimed to investigate the pharmacokinetics (PK) of commonly prescribed anticoagulant drugs when administered in oral solid dosage forms, focusing on their behavior in diverse patient cohorts. A comprehensive literature review was conducted to identify relevant studies reporting the PK parameters of oral anticoagulant medications, including warfarin, dabigatran, rivaroxaban, apixaban, and edoxaban. Key databases such as PubMed, Embase, and Cochrane Library were systematically searched using predefined search terms. Studies published in English from inception to the present were included. The review revealed notable variations in the PK profiles of anticoagulant drugs across different patient populations, including elderly individuals, pediatric patients, those with renal or hepatic impairment, and individuals with specific genetic polymorphisms affecting drug metabolism. Age-related changes in drug absorption, distribution, metabolism, and excretion were observed, leading to altered drug exposure and potentially increased susceptibility to adverse effects in older adults. Additionally, patients with renal or hepatic dysfunction exhibited distinct alterations in drug clearance, necessitating dose adjustments to mitigate the risk of toxicity or reduced efficacy. Furthermore, genetic polymorphisms in drug-metabolizing enzymes, particularly cytochrome P450 (CYP) enzymes and P-glycoprotein transporters, were found to influence the PK parameters of certain anticoagulant agents. Variability in drug response and the occurrence of bleeding or thrombotic events were attributed to interindividual differences in drug metabolism and disposition. In conclusion, understanding the pharmacokinetic variability of oral anticoagulant drugs in different patient populations is essential for optimizing therapeutic outcomes and minimizing adverse effects. Tailored dosing strategies based on patient-specific factors, including age, renal/hepatic function, and genetic characteristics, are warranted to ensure safe and effective anticoagulant therapy across diverse clinical scenarios. Future research should focus on elucidating the underlying mechanisms driving PK variability and developing personalized dosing algorithms to enhance the precision of anticoagulant drug therapy.*

**Keywords:** Urban Green Infrastructure, Ecosystem services, Economic valuation, Social valuation