Global Journal of Medical Research: B
Pharma, Drug Discovery, Toxicology & Medicine
Volume 24 Issue 1 Version 1.0 Year 2024
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Varpha-K Prototype, the Evolution of Anticoagulant Treatment with More Safety and Efficiency: Will this be the End of Bleeding?

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Keywords: *drug, disposal, pharmaceutical chemical residues, environment.*

GJMR-B Classification: *NLM Code: QV 38*

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I. Introduction

Improving the quality of life has been a human purpose since the beginning of humanity. Thus, the cure and relief of diseases is an incessant search, for which the chemical synthesis of new medicines has contributed to the genesis of new drugs. Pharmaceutical chemistry seeks to discover and develop new chemical molecules that can be useful as medicines, in addition to the possibility of improvement in some molecular physicochemical aspect. One of the most efficient ways to create new bioactive molecules is to use molecules that already exist on the pharmaceutical market, for example, by hybridizing pharmacophoric groups (KOROLKOVAS 1982). All of this facilitates the creation of new drugs and the need for drugs that act in the treatment of bleeding, especially during surgical periods, where these clinical manifestations become much more common and aggressive. These modifications cannot alter the pharmacophoric group, which is the chemical functional group responsible for the therapeutic effects (KOROLKOVAS 1982). Molecular association is a method used for molecular improvement, where a different molecule of the original drug is added to increase the efficiency of the prototype. Thus, our objective was to present the physicochemical aspects related to the association of vitamin K with warfarin molecule (VAR), in order to develop the Varfa-K Prototype, a new drug that has fewer toxic effects, mainly reducing bleeding events caused by VAR.

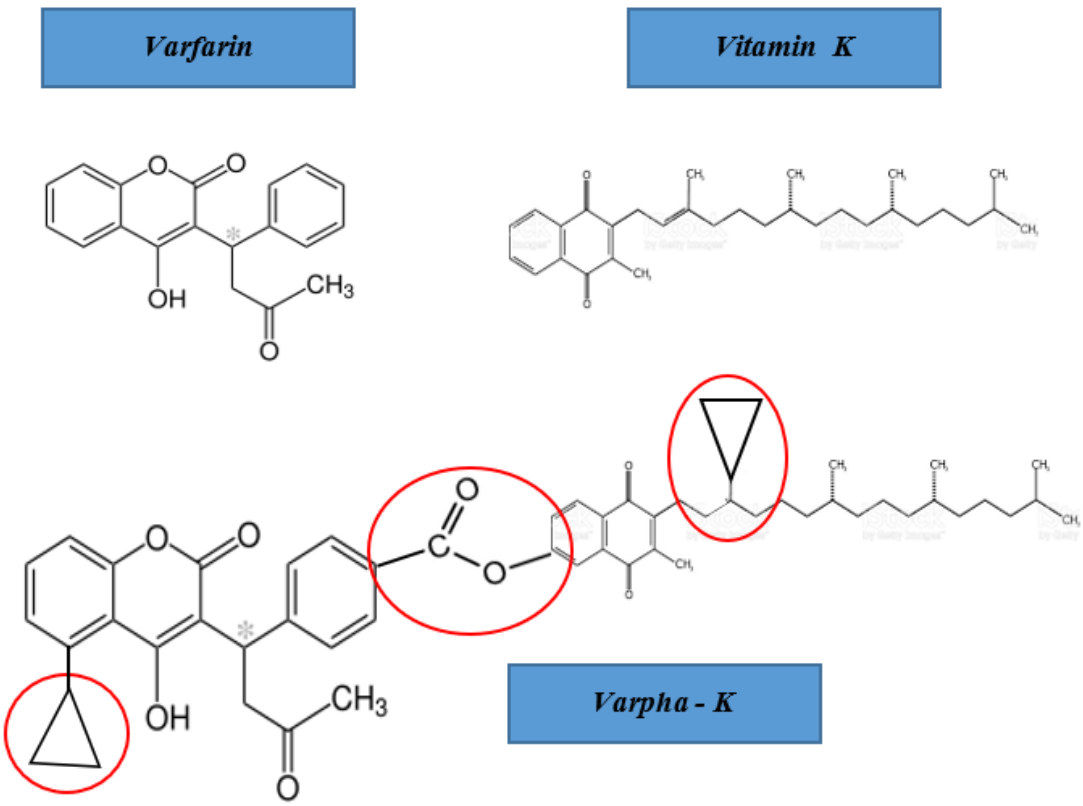
II. Methodology

Initially, a small bibliographic review was carried out using scientific outlets on Scielo and Pubmed, in addition, we established filters by publication time (5 years) and Portuguese or English language. Additionally, er also carry one used the methodology of

molecular association and insertion of bulky groups. By adding a molecule (vitamin K) to the parent drug and its own antidote against bleeding. The presence of the ester now will determine the decrease in metabolization of both molecules, since they will be separated by the action of the esterase in the biotransformation processes carried out in the liver.

III. Results and Discussion

The results with the development of this new molecular academic prototype varpha-K (figure 1) bring great expectations for patients who suffer from intense bleeding and that, depending on the condition, health can even lead to death. This new molecular architecture with the addition of the vitamin K molecule and the insertion of these bulky groups indicates that there will be a favor for the reduction of toxic clinical manifestations associated with the traditional VAR molecule, such as the dreaded tissue bleeding, since vitamin K has anti-hemorrhagic action, in addition to promoting increased bioavailability thanks to the presence of these bulky groups, allowing the new drug to take longer to be metabolized by Cytochrome P450 enzymes.



Legends: Image of warfarin and vitamin K molecules, as well as that of the academic prototype Varpha-K

IV. Conclusion

Our studies are just academic hypotheses, but with great therapeutic expectations, since, to this day, there are few studies for improving medication and especially for the toxic effects of warfarin.

Declarações:

Conflito de interesse: Os autores declaram não haver conflitos de interesses.

References Références Referencias

1. ANVISA – AGÊNCIA NACIONAL DE VIGILÂNCIA SANITÁRIA. Medicamentos. Descarte de Medicamentos: Responsabilidade Compartilhada. Disponível em: Acesso em: 13 nov. 2011. BILA, M.B. & DEZOTTI, M. (2003). Fármacos no meio ambiente. Química Nova, v. 26, n. 4, p. 523-530.
2. BRASIL. (2004). MINISTÉRIO DA SAÚDE. Agência Nacional de Vigilância Sanitária. Resolução da Diretoria Colegiada – RDC nº 306, de 7 de dezembro de 2004. Disponível em: Acesso em: 26 nov. 2011.
3. BRASIL. (2005). Resolução CONAMA nº 358 de 29 de abril de 2005. Dispõe sobre o tratamento e a disposição final dos resíduos dos serviços de saúde e dá outras providências. Publicação DOU, n. 084, de 04 de maio de 2005, p. 63-65. Disponível em: Acesso em: 26 nov. 2011.

4. BRASIL. (2010). Lei nº 12305, de 02 de agosto de 2010, institui a Política nacional de Resíduos Sólidos. Disponível em: Acesso em 13 nov. 2011.
5. FERREIRA, C. L *et al.* Análise do conhecimento da população sobre descarte de medicamentos em Belo Horizonte/MG. *Interfaces Científicas-Saúde e Ambiente*, v. 3, n. 2, p. 9-18, 2015.
6. eCycle (2019) Como fazer o descarte de medicamentos vencidos? https://www.ecycle.com.br/descarte-de-medicamentos/
7. DA SILVA, P, COSTA, C.; CAMPOS, C. et al. Uso irracional de medicamentos: uma perspectiva cultural**.** *Brazilian Journal of Development,* v. 7, n. 3, p. 21660-21676, 2021.
8. DOS SANTOS, F. N. S. Descarte inadequado de medicamentos vencidos ou em desuso. *Revista Gestão & Sustentabilidade Ambiental,* v. 8, n. 1, p. 290-300, 2019
9. World Health Organization: *Report of the WHO Expert Committee on national drug policies: Contribution to updating the WHO guidelines for developing national drug policies.* Geneva: WHO; 1995.
10. World Health Organization. *The rational use of drugs: report of the conference of experts.* Nairobi 1985 Jul 25-29. Geneva: WHO; 1987.
11. FRANCESCHET, I., FARIAS, M.R**.** *Investigação do Perfil dos Farmacêuticos e das Atividades Desenvolvidas em Farmácias do Setor Privado no Município de Florianópolis, Santa Catarina, Brasil.* Acta Farmacêutica. Bonaerense, v.24, n. 4, p. 590-597, 2005;
12. CASANOVA, T. B. S., LELIS, T. B. S. & SOARES, M. A. Ações de Educação Ambiental no Parque Natural Municipal de Marapendi. BJAER – Brazilian Journal of Animal and Environmental Research, v. 2, n. 5, p. 1736-1753, 2019.