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ملخص

تضم عائلة الوردية (*Rosaceae*) تنوعاً واسعاً من الأنواع الطبية التي أثبتت مكوناتها الفيتوكيميائية إمكانات وقائية قلبية معتبرة. يدرس هذا العمل الدور الدوائي لعشرين نوعاً من الوردية في التحكم في أمراض القلب والأوعية الدموية، مع تركيز خاص على مركباتها البوليفينولية الحيوية النشطة، بما فيها الفلافونويدات والأحماض الفينولية والإيلاجيتانينات والبروسيانيدينات الأوليغومرية. تمارس هذه المكونات تأثيراتها العلاجية عبر آليات تكاملية تشمل الدفاع المضاد للأكسدة ،والإشارات المضادة للالتهاب، وحماية البطانة الوعائية، والنشاط المضاد لاضطراب النظم، وتعديل استقلاب الدهون. تؤلى عناية خاصة لـ *Crataegus monogyna* و *Crataegus azarolus*اللتين تبرزان بوصفهما النوعين الأكثر أهمية دوائياً، إلى جانب الأهمية الإثنوبوتانية لهذه العائلة في السياق الجزائري، ولا سيما في منطقة سطيف. وتدعم النتائج مجتمعةً القيمة العلاجية للمركبات الفيتوكيميائية المشتقة من الوردية، وتسلط الضوء على إمكانية تطوير علاجات نباتية متعددة المكونات موحدة المعايير لإدارة أمراض القلب والأوعية الدموية.

الكلمات المفتاحية: الفصيلة الوردية؛ أمراض القلب والأوعية الدموية؛ العلاج بالأعشاب؛ النباتات الطبية؛ الزعرور أحادي المدقة؛ آليات حماية القلب؛ علم النباتات العرقية)الجزائر - سطيف(؛ الزعرور الزائف.

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Abstract

The Rosaceae family encompasses a broad diversity of medicinal species whose phytochemical constituents have demonstrated significant cardioprotective potential. This work examines the pharmacological role of twenty Rosaceae species in cardiovascular disease management, with particular emphasis on their bioactive polyphenolic compounds, including flavonoids, phenolic acids, ellagitannins, and oligomeric procyanidins. These constituents exert their therapeutic effects through complementary mechanisms encompassing antioxidant defence, antiinflammatory signaling, endothelial protection, antiarrhythmic activity, and lipid metabolism modulation. Special attention is given to *Crataegus monogyna* and *Crataegus azarolus*, which emerge as the most pharmacologically relevant species, alongside the ethno-botanical significance of the family in the Algerian context, particularly in the Setif region. The findings collectively support the therapeutic value of Rosaceae-derived phytochemicals and highlight the potential for developing standardized multi-component botanical therapeutics for cardiovascular disease management.

Key words: Rosaceae; Cardiovascular diseases; Phytotherapy; Medicinal plants; *Crataegus monogyna*; Cardioprotective mechanisms; Ethnobotany (Algeria – Sétif); *Crataegus azarolus*.

Résumé

La famille des Rosacées englobe une large diversité d'espèces médicinales dont les constituants phytochimiques ont démontré un potentiel cardioprotecteur significatif. Ce travail examine le rôle pharmacologique de vingt espèces de Rosacées dans la prise en charge des maladies cardiovasculaires, en mettant un accent particulier sur leurs composés polyphénoliques bioactifs, notamment les flavonoïdes, les acides phénoliques, les ellagitanins et les procyanidines oligomériques. Ces constituants exercent leurs effets thérapeutiques par des mécanismes complémentaires englobant la défense antioxydante, la signalisation antiinflammatoire, la protection endothéliale, l'activité antiarythmique et la modulation du métabolisme lipidique. Une attention particulière est accordée à *Crataegus monogyna* et *Crataegus azarolus*, qui s'imposent comme les espèces les plus pertinentes sur le plan pharmacologique, aux côtés de la signification ethnobotanique de la famille dans le contexte algérien, notamment dans la région de Sétif. Les résultats soutiennent collectivement la valeur

thérapeutique des phytochimiques dérivés des Rosacées et soulignent le potentiel de développement de thérapeutiques botaniques multi-composants standardisées pour la prise en charge des maladies cardiovasculaires.

Mots clés : Rosacées ; Maladies cardiovasculaires ; Phytothérapie ; Plantes médicinales ; *Crataegus monogyna* ; Mécanismes cardioprotecteurs ; Ethnobotanique (Algérie – Sétif) ; *Crataegus azarolus*

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Introduction

Background and Global Context of Cardiovascular Diseases

Cardiovascular diseases (CVDs) remain the leading global cause of mortality and disability, accounting for an estimated 19.2 million deaths in 2023, which represents a near doubling since 1990 (Global Burden of Cardiovascular Diseases and Risks 2023 Collaborators, 2025). This critical healthcare and economic burden, driven primarily by hypertension, ischaemic heart disease, stroke, arrhythmias, thrombosis, and heart failure, is disproportionately concentrated in low- and middle-income countries where more than 75% of global CVD deaths occur (Timmis *et al*., 2023).

Despite substantial progress in conventional pharmacology (including beta-blockers, ACE inhibitors, anticoagulants, and lipid-lowering therapies), overall clinical outcomes are

frequently constrained by poor long-term adherence, severe adverse drug events, prohibitive costs, and the complex, multifactorial nature of these pathologies (Liperoti *et al*., 2023). Consequently, global interest has shifted toward plant-based alternatives, with the World Health Organization noting that roughly 80% of the population depends on traditional herbal medicine for primary healthcare (WHO Traditional Medicine Strategy, 2025).

Among the botanical groups investigated for cardiovascular therapies, the *Rosaceae* family offers the most extensive preclinical evidence; this family encompasses 2,500–3,000 species across 90 generasuch as *Crataegus*, *Prunus*, *Malus*, *Rosa*, *Fragaria*, and *Rubus*which are widely distributed and utilized across North Africa, Europe, and Asia (Celiński *et al*., 2024).

Scientific Rationale and Scope of the Review

The diverse phytochemical composition of the Rosaceae family including flavonoids (quercetin, vitexin, kaempferol), phenolic acids (chlorogenic, gallic, and caffeic acids), ellagitannins, oligomeric procyanidins, and triterpenic acids (ursolic and oleanolic acids) underpins a multi-targeted pharmacological profile that directly modulates cardiovascular pathophysiology (Celiński *et al*., 2024).

Experimental and ethnopharmacological studies have thoroughly characterized these molecular pathways, demonstrating that Rosaceae-derived bioactive compounds exert potent antioxidant, anti-inflammatory, antihypertensive, antiarrhythmic, antithrombotic, and lipid-modulating effects (Celiński *et al*., 2024; Belhouala & Benarba, 2021).

This academic work is specifically centered on Algeria, where ethnobotanical surveys across diverse geographical regions stretching from the Sétif highlands and Kabylie to the Sahara identify Rosaceae alongside Lamiaceae, Asteraceae, Apiaceae, and Fabaceae as one of the top five most utilized medicinal plant families in traditional healing (Belhouala & Benarba, 2021)

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