Indian Journal of Natural Products and Resources
Vol. 17(1), March 2026, pp. 15-27
DOI: 10.56042/ijnpr.v17i1.17751

Comprehensive review on the pharmacological potential of *Astilbe rivularis* (Buch.-Ham. ex D. Don) in diabetic complications, evidenced by computational analysis

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Received 08 March 2025; revised received 18 February 2026; accepted 23 February 2026

Astilbe rivularis is a rare plant with numerous traditional medicinal values, predominantly found in North America and Asia. For centuries, *A. rivularis* has been traditionally employed in regional ethnomedicinal practices to address several health issues. It contains various phytochemicals, such as alkaloids, coumarins, flavonoids, and glycosides, and is recognised for its diverse biological properties, including antimicrobial, anti-inflammatory, antioxidant, and antidiabetic activities. However, research on this plant and its role in diabetic complications remains limited. Moreover, phytoconstituents present in *A. rivularis* might be promising candidates for the treatment of diabetic complications involving oxidative stress, the polyol pathway, the PKC-DAG pathway, the hexosamine pathway, and the formation of advanced glycation end-products (AGEs). Therefore, *in silico* studies were performed targeting RAGE (receptor for AGE), aldose reductase (ALR), and sorbitol dehydrogenase (SDH), which revealed significant interactions with bioactive compounds from *A. rivularis*, emphasising the potential of this plant for the development of therapeutic strategies to manage diabetes-associated complications. This article presents a narrative review supported by *in silico* analyses, primarily focusing on the pharmacognostic, phytochemical, and ethnopharmacological attributes of *A. rivularis*, while further exploring its potential relevance in the context of diabetic complications.

Keywords: *Astilbe rivularis*, Diabetic complications, Ethnomedicine, Phytochemicals

IPC code; Int. cl. (2021.01)– A61K 36/00, A61P 3/00, A61P 3/10