



Simultaneous Estimation of Naturally Occurring Flavonoids by RP-HPLC Method in Dasmooola Churna

Maitreyi Zaveri and Bhavita Dhru

Department of Pharmacognosy and Regulatory Affairs, K.B. Institute of Pharmaceutical Education and Research (KBIPER), Sector-23, Gandhinagar-382024, Gujarat.

Email: maitreyi.zaveri@kbiper.ac.in

DOI : <https://doi.org/10.55248/gengpi.6.0725.2585>

ABSTRACT:

Flavonoids are pivotal in plant biochemistry and physiology, contributing significantly to the biological activities of plants. Flavonoids are polyphenolic compounds recognized for their antioxidant properties and numerous health benefits. This study aimed to evaluate and quantify the flavonoids catechin, mangiferin, scopoletin, rutin, ellagic acid, baicalein, quercetin, naringenin, kaempferol, chrysin in dasmooola root. High-Performance Liquid Chromatography (HPLC) was used for the simultaneous estimation of flavonoids utilizing a reverse-phase column Optimix C8/C18 with a mobile phase A consisting of Buffer Solution (10 ml of Orthophosphoric into 1000 ml water): Methanol: Acetonitrile in 80: 10: 10 and mobile phase B consisting of 50 :20: 30 ratios at a flow rate of 1 mL/min, with detection at 323 nm. The standard retention times for catechin, mangiferin, scopoletin, rutin, ellagic acid, baicalein, quercetin, naringenin, kaempferol, chrysin were 7.09, 9.52, 21.0, 21.89, 22.64, 25.03, 28.24, 31.43, 34.64, and 37.14 respectively. In the root extract catechin, mangiferin, scopoletin, rutin, ellagic acid, baicalein, quercetin, naringenin, kaempferol, chrysin were detected. These findings confirm the presence of significant flavonoids with potential health benefits in Dasmooola Churna.

Keywords: Dasmooola Churna, flavonoids, RP-HPLC, simultaneous estimation

INTRODUCTION:

The role of flavonoids in enhancing the bioavailability of Dasmooola, a traditional Ayurvedic formulation composed of ten medicinal roots such as Bilva, Gambhari, Patala, Shalaparni, Gokhru, Agnimantha, Shyonaka, Brihati, Kantakari, and Prishnaparni. Flavonoids are naturally occurring compounds found in various plants, and their ability to modulate cytochrome P450 (CYP450) enzymes, particularly CYP3A4, plays a crucial role in influencing drug metabolism, absorption, and overall efficacy, thereby highlighting their importance in therapeutic contexts. Dasmooola may enhance the bioavailability of its active compounds by improving their solubility, stability, and absorption in the body, thereby potentially maximizing therapeutic outcomes [1]. The modulation of CYP450 activity by flavonoids is particularly notable as it can lead to increased plasma concentrations of co-administered drugs, which may improve their clinical effectiveness [2].

Dasamkla, commonly referred to as Dashamoola, is a significant Ayurvedic formulation composed of ten medicinal roots, each contributing unique therapeutic properties to the blend. This classical formulation is recognized for its efficacy in treating a variety of health concerns, particularly those associated with the nervous system, musculoskeletal system, and digestion [3]. The term "Dashamoola" derives from the Sanskrit words "Dasha," meaning ten, and "moola," meaning root [4].

The formulation Dashamoola consists of ten specific roots, categorized into two groups: Brihat Panchamoola (five large roots) Bilva (*Aegle marmelos*), Arani (*Premna serratifolia*), Gambhari (*Gmelina arborea*), Shyonaka (*Oroxylum indicum*), Patala (*Stereospermum suaveolens*), and Laghu Panchamoola (five small roots) Brihati (*Solanum indicum*), Shalaparni (*Desmodium gangeticum*), Kantakari (*Solanum xanthocarpum*), Gokhru (*Tribulus terrestris*), and Prishnaparni (*Uraria picta*) [5]. These roots work synergistically to promote overall health and well-being, addressing various ailments, particularly those related to Vata dosha, such as inflammation, pain, and respiratory issues [6].

The formulation of Dasmooola Churna is not only rooted in traditional practices but is also backed by modern studies highlighting the presence of significant flavonoids and other beneficial compounds. Flavonoids contribute to the antioxidant properties of Dasmooola, potentially lowering the risk of chronic diseases and enhancing overall health [7][8]. This combination has been effectively used for treating respiratory ailments, joint pain, fevers, and digestive disorders, showcasing its holistic approach to wellness in Ayurveda [9][10]. The preparation method involves washing, drying, and grinding the roots into a fine powder, which ensures that the active ingredients remain intact and effective for medicinal use [11]. This careful process of formulation is crucial in preserving the therapeutic potential of each root, contributing to the overall efficacy of Dasmooola Churna in promoting health and vitality [12]. Health Benefits of Flavonoids Flavonoids, a diverse group of phytochemicals found in various fruits, vegetables, and plants, are well