OPEN ACCESS Freely available online

Medicinal & Aromatic Plants

ISSN: 2167-0412

Opinion Article

Advance Understanding of Black Cumin: Investigating Thymoquinone Yield and Agronomic Traits

Liang Le*

Department of Aromatic Plants, Zhejiang University, Zhejiang, China

DESCRIPTION

Black cumin, scientifically referred to as *Nigella sativa* L., is renowned for its medicinal properties and culinary uses, with both its seeds and oil prized for their flavor and therapeutic benefits. Despite considerable research on the agronomic and chemical aspects of black cumin, there remains a notable gap in understanding thymoquinone yield, particularly in cold-pressed seed oil. This article aims to address this gap by investigating the thymoquinone content in cold-pressed seed oil and its yield per hectare among Turkish black cumin genotypes, specifically from two cultivated Nigella species, N.sativa and N.damascena. Additionally, this study examines their agronomic properties, seed yield, and fatty acid composition.

Conducted over a two-year period under consistent climatic and soil conditions using a randomized block design, this study employed gas chromatography flame ionization detector (GC-FID) to analyze the fatty acid composition of seed oils. Thymoquinone levels were determined using the Waters Acquity UPC2 system. Significant differences were observed among genotypes in various agronomic characteristics, with the exception of the number of branches. The highest seed yields were recorded in Genotype 3 (2.690 kg/ha), Genotype 17 (2.227 kg/ha), and Genotype 16 (2.003 kg/ha), although variations were noted across different climatic conditions.F

Regarding seed oil composition, there were variations in the ratios of seed oil among genotypes in both years, with a statistically significant difference observed in the second year ($p<0.05$). Thymoquinone was found to be absent in N. damascena seed oil samples, while it ranged from 0.45% to 4.57% in cold-pressed seed oil from N.sativa genotypes. Thymoquinone yields per hectare ranged from 1.24 to 18.41 kg/ha. Major fatty acids, including linoleic, oleic, and palmitic acids, exhibited consistency across all genotypes. The findings of this study offer insights into the classification of genotypes based on thymoquinone content. Those with higher thymoquinone content are deemed suitable for medicinal and folk medicine purposes, while those with lower content are more suited for culinary applications. Furthermore, the study sheds light on the industry's classification of "bitter black cumin" or "sweet black cumin," which correlates with thymoquinone content in cold-pressed seed oil.

It represents a significant advancement in the study of Turkish black cumin genotypes, shedding light on crucial aspects such as agronomic behavior, seed yield, and thymoquinone content. By systematically investigating these parameters, have expanded our understanding of the diverse characteristics exhibited by different genotypes, paving the way for more informed decision-making in genotype selection. The findings of this study hold practical implications for agricultural practices and commercial endeavors involving black cumin cultivation. By identifying genotypes with superior traits, particularly those with higher thymoquinone content, stakeholders in the agricultural sector can optimize their cultivation strategies to enhance yields and quality. Moreover, the classification of genotypes based on thymoquinone content facilitates targeted utilization of black cumin for specific purposes, whether medicinal, culinary, or industrial.

Furthermore, our research contributes to the broader discourse on the versatility and potential applications of black cumin. By elucidating the relationship between genotype characteristics and end-use suitability, enables stakeholders to make informed decisions regarding the utilization of black cumin in various industries, ranging from pharmaceuticals to culinary arts. This nuanced understanding fosters the diversification of black cumin products and expands its market potential, ultimately benefiting both producers and consumers.

CONCLUSION

Moving forward, it is imperative to continue exploring the genetic diversity of black cumin and its implications for agronomic performance and product quality. Long-term studies encompassing larger sample sizes and diverse environmental conditions can further enhance our understanding of genotype-environment interactions and refine genotype selection criteria.

Correspondence to: Liang Le, Department of Aromatic Plants, Zhejiang University, Zhejiang, China, E-mail: leliang27@caas.cn

Received: 27-Feb-2024, Manuscript No. MAP-24-30599; **Editor assigned:** 01-Mar-2024, PreQC No. MAP-24-30599 (PQ); **Reviewed:** 15-Mar-2024, QC No. MAP-24-30599; **Revised:** 22-Mar-2024, Manuscript No. MAP-24-30599 (R); **Published:** 29-Mar-2024, DOI: 10.35248/2167-0412.24.13.472.

Citation: Le L (2024) The Significant Growth in the Global Market for Botanical and Plants Products. Med Aromat Plant. 13:472.

Additionally, interdisciplinary collaborations involving agronomists, geneticists, chemists, and industry experts can foster innovation and drive advancements in black cumin cultivation and utilization. It not only enriches our knowledge of Turkish black cumin genotypes but also underscores the importance of leveraging this diversity to optimize cultivation practices and maximize the potential of black cumin across various sectors. By encouraging collaboration and informed decision-making and can unlock new opportunities for the cultivation, commercialization, and utilization of black cumin, thereby enhancing its socioeconomic impact and promoting its widespread adoption.