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DHANYAKA (CORIANDRUM SATIVUM LINN.*)* IN AYURVEDA: CLASSICAL UNDERSTANDING AND CONTEMPORARY SCIENTIFIC PERSPECTIVES

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ABSTRACT

Background: *Dhanyaka* (*Coriandrum sativum Linn.*, Family: Apiaceae) is a widely used culinary and medicinal herb valued in Ayurveda for *its Trishnanigrahana*, *Sitaprasamana*, *Dipana-Pachana*, and *Mutrala*, *Jwarahara* properties. It is employed in dry, fresh, and leafy forms for various therapeutic purposes. **Objective:** This review aims to present a comprehensive understanding of *Dhanyaka* through classical Ayurvedic references and to correlate its traditional uses with contemporary phytochemical and pharmacological findings. **Materials and Methods:** Classical information was compiled from Brihattrayi and major Nighantus. Modern data were collected from electronic databases (PubMed, Scopus, Google Scholar) and peer-reviewed journals to document phytochemical constituents and experimentally validated pharmacological activities. **Results:** *Dhanyaka* is mentioned in several Ayurvedic groups including *Trishnanigrahana* and *Sitaprasamana Mahakashayas*, indicating its role in alleviating thirst, heat, and digestive disorders. Its *Rasa Panchaka* mainly *Kashaya*, *Tikta*, and *Madhura Rasa* with *Laghu*, *Snigdha Guna* and *Ushna or Sheeta Virya* supports its *Tridoshahara* and

Agnikrit properties. Phytochemical studies reveal that *C. sativum* contains linalool, flavonoids, phenolic acids, coumarins, carotenoids, fatty acids, and sterols as major bioactive constituents. Modern pharmacological investigations confirm its antihyperlipidemic, antihypertensive, antioxidant, cardioprotective, antibacterial, antiulcer, diuretic, immunomodulatory, antiaging, antidiabetic, and antiemetic effects, validating its traditional therapeutic claims and broad pharmacological spectrum. **Conclusion:** The strong correlation between Ayurvedic concepts and scientific evidence establishes *Dhanyaka* as a multipotent herb with proven activity in gastrointestinal, metabolic, cardiovascular, and immune disorders. Further studies focusing on standardization, dosage optimization, and clinical evaluation will strengthen its evidence-based integration into Ayurvedic and modern healthcare systems.

KEYWORDS: *Dhanyaka*, *Coriandrum sativum* Linn., *Ayurveda*, pharmacology, phytochemistry, *Tridoshahara*.

INTRODUCTION

Dhanyaka consists of dried ripe fruits of *Coriandrum sativum* Linn. (Fam.Apiaceae). The name of the plant is in fact derived from the Greek word, 'Korion' which mean bug. (The essential oil of the seeds gives the plants its characteristic 'bug' smell.)[1] This plant is a slender, glabrous, branched, annual herb, cultivated all over India, 30-90 cm high, giving characteristic aroma when rubbed.[2] Coriander is indigenously distributed in Italy, but is widely cultivated in The Netherlands, Central and Eastern Europe, the Mediterranean (Morocco, Malta, and Egypt), China, India and Bangladesh and widely recognized for its uses in culinary and traditional medicine.[3] In Ayurveda, Ardra Dhanyaka (wet coriander), Sushka *Dhanyaka* **(**dry coriander**)**, and *Dhanyaka Shaka* **(**fresh coriander leaves**)** are different forms of coriander used for their medicinal properties.[4] Classical Ayurveda texts document its use in treating a variety of ailments, while recent scientific research findings are confirming these therapeutic indications through phytochemical profiling and pharmacological studies. This review attempts to present a comprehensive overview of various aspects of *Dhanyaka* available through classical literary sources of Ayurveda, ethnobotanical, phytochemical, and pharmacological studies, summarizes its uses and identifies future research potential.

MATERIALS AND METHODS

This review is based on a comprehensive analysis of classical Ayurvedic texts, including the *Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya* and various *Nighantus to* document the traditional uses, synonyms, properties and therapeutic indications of *Dhanyaka*. Scientific information regarding the Taxonomy, Vernacular names, Morphology, phytochemistry and pharmacological activities of *C. sativum* was gathered from peer-reviewed journals, electronic databases (such as PubMed, Scopus, and Google Scholar), and authoritative botanical references. The probable English equivalent of technical terminologies were noted referring NAMASTE portal.

RESULT

Etymology[5]

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The word is derived from ‘*Dhanya* – to be praised or to sound’
(‘*dhan śabde*’ – meaning sound or praise). that which is praised by those who eat it.

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Similar to *Dhānya* (grain)

Table No. 1: Classical Classification of *Dhanyaka*.

Ayurvedic Text	Group / *Gana / Varga*
Charaka Samhita	*Trishna nigrahaneeya mahakashayani* *Sitaprashamana mahakashayani*[6]
Sushruta Samhita	*Guduchyadi Gana*[7]
Bhavaprakasha	*Haritakyadi Varga*[8]

Table No. 2: Synonyms of *Dhanyaka* as per Different Authors.

Synonyms	*C.S*	*S.S*	A.H	*Bha.Ni*	*Ra.Ni*	*Dha.Ni*	*Kai.Ni*
Dhanyakam	+	+	+	+	+	+	+
Kustumburu	+	+	_	+	+	+	+
Vitunnakam	+	_	_	+	+	+	+
Chatra	_	_	_	+	_	_	+
Kunati	_	_	_	+	_	_	_
Dhenuka	_	_	_	+	_	_	_
Chatradhanya	_	_	_	_	_	+	_
Veshanagrya	_	_	_	_	_	_	+

REFERENCES OF *DHANYKA* IN *BRIHAT TRAYI*

Table No. 3: References of *Dhanyaka* in *Charaka Samhita.*

Sl.No.	Reference	Context
1.	*Cha.Su 4/29*	*Trishnanigrahana mahakashaya*
2.	*Cha.Su 4/42*	*Seetaprashamana mahakashaya*
3.	*Cha.Su 27/173*	*Harita varga*
4.	*Cha.Chi 2/4/19*	*Pupalikayoga*
5.	*Cha.Chi 3/183*	*Jwara chikitsa Yavagu Kalpana*
6.	*Cha.chi 5/86,111*	*Vatika Gulma chikitsa*
7.	*Cha.chi 14/106,129*	*Arsha chikitsa*
8.	*Cha.chi 15/142*	*Grahani dosha chikitsa*
9.	*Cha.chi 19/20,26,105*	*Atisara chikitsa*
10.	*Cha.chi 20/24*	*Chardi chikitsa*
11.	*Cha.Kal 7/54*	*Shyamatrivrit kalpa*
12.	*Cha.Kal 12/89*	*Danti Dravanti kalpa*

Table No. 4: References of *Dhanyaka* in *Susruta Samhita.*

Sl.No.	Reference	Context
1.	*Su.Sutra 38/50*	*Dravyasangrahaneeya adhyaya(Guduchyadi gana in the name of kustumburu)*
2.	*Su.Sutra 46/221*	*Annapanavidhi adhyaya*
3.	*Su.Sa 10/22*	*Garbhini vyakaranasareeram,Makkala chikitsa*
4.	*Su.Chi 17/4*	*Visarpanadistanarogachikitsa*
5.	*Su.Chi 20/38*	*Kshudrarogachikitsa*
6.	*Su.Chi 5/26*	*Mahavatavyadhi chikitsa ,Adhmana chikitsa*
7.	*Sus.Kal 6/19*	*Dundubhisvaneeyamadhyaya*
8.	*Su.Utt 39/193*	*Jwarapratishedhadhyaya*
9.	*Su.Utt 40/36,114*	*Atisarapratishedhadhya*
10.	*Su.Utt 42/25*	*Gulmapratishedhadhyaya*

Table No. 5: References of *Dhanyaka* in *Ashtanga Hridaya.*

Sl.No	Reference	Context
1.	*Ash.Chi1/28*	*Jwarachikitsa (jwaraatisarapeya)*
2.	*Ash.Chi 3/4*	*Kasachikitsa*
3.	*Ash.Chi 7/44*	*Madatyayachikitsa (Panaka)*
4.	*Ash.Chi 14/17,31,60*	*Gulmachikitsa*
5.	*Ash.Chi 18/11*	*Visarpa chikitsa*

Table No. 6: References of *Dhanyaka* in various *Nighantus.*

Sl.No	*Nighantu*	Context
1.	*Dhanwantari Nighantu*	*Satapushpadi varga*[9]
2.	*Kaiyadeva Nighantu*	*Oshadi varga,Kritannavarga*[10]
3.	*Madanapala Nighantu*	*Suntyadi varga*[11]
4.	*Bhavaprakasha Nighantu*	*Hareetakyadi varga,Sandhana varga(madyagandhanashakopaya),*

		Anekarthanamakagan[8]
5.	*Raja Nighantu*	*Pippalyadi varga*[12]
6.	*Nighantu Adarsha*	*Jeerakadi varga*[5]
7.	*Ashtanga Nighantu*	*Guduchyadi gana*[13]

Table No. 7*: Rasa Panchaka* of *Dhanyaka* as per Different *Acharyas.*

Acharyas	***Rasa***	***Guna***	***Virya***	***Vipaka***	***Prabhava***	***Doshaghnata***
Bha.Ni[8]	*Kashaya, Tikta, Katu*	*Snigdha, Laghu*	*Ushna*	*Madhura*	-	*Tridoshanut*
Ra. Ni[12]	*Madhura, Kashaya*	-	***Seeta***	-	-	*Pitta Kapha hara*
Kai. Ni[10]	*Madhura, Kashaya, Katu,Tikta*	*Snigdha,Laghu*	*Ushna*	*Madhura*	-	*Tridoshahara*
Dha.Ni[9]	*Kashaya,tikta madhura*	*Snigdha*	-	*Madhura*	-	-
Ma. Ni[11]	*Kashaya*	*Snigdha,Laghu*	-	*Madhura*	-	*Tridoshanut, Viseshat pittanashana*
Ni. A[5]	*Katu, madhura*	-	***Seeta***	*Madhura*	-	*Pitta Kapha hara*

Table No. 8: Indications of *Dhanyaka* as per Different Acharyas.

Bha.Ni [8]	*Vrushya, Mutrala, Dipana, Pacana, Rocaka, Grahi*
Dha.Ni [9]	*Hrudya, Cakshushya, Dipana, Rocaka*
Kai.Ni [10]	*Avrushya, Mutrala, Hrudya, Rucya, Dipana, Pacana, Bhedi, Vahniprad*
Ra.Ni [12]	*Dipana*
Ma.Ni [11]	*Vrushya, Mutrala, Hrudya, Rucya, Pacana, Agnikrit*

Table No. 9: Vernacular Names of *Dhanyaka.*[14]

Language	Name
Hindi	Dhaniya
English	Coriander fruit
Gujarat	Dhana
Bengal	Dhane,Dhania
Assam	Dhaniya
Kannada	Havija
Kashmir	Dhaniwal, Dhanawal
Tamil	Kottamalli,Dhaniya
Telugu	Dhaniyalu
Malayalam	Malli
Marati	Dhane
Orisa	Dhaniya
Punjab	Dhaniya
Urdu	Kishneez

Table No. 10: Taxonomy of *C.sativum*.[15]

Taxonomic Rank	Taxon
Kingdom	Plantae
Division	Spermatophyta
Order	Apiales
Class	Magnoliopsida
Family	Apiaceae
Genus	Coriandrum
Species	C.sativum
Common name	Coriander

Morphology of *C. sativum*

Dhanyaka is a slender, smooth, and much-branched annual herb that grows widely throughout India, attaining a height of about 30–90 cm. The plant emits a distinct aromatic odour when its parts are crushed. The leaves are of two types: the lower leaves are petioled and imparipinnatisect, divided into 2–3 pairs of broad, ovate-cuneate, and coarsely toothed segments, while the upper leaves are shorter, nearly sessile, and 2–3 pinnatisect with narrow, thread-like lobes. The stem is erect, thin, sympodial, and branched, bearing several lateral branches from the lower nodes, each terminating in an inflorescence. During the flowering stage, the green ribbed stem may turn reddish or violet in colour. In a mature plant, the stem becomes hollow, measuring about 2 cm in diameter near the base. The flowers are small, pinkish-white, and arranged in short-stalked compound umbels consisting of 5–10 rays. The involucre is either absent or represented by a single, slender, bristle-like bract, while the involucel usually contains three short, linear-lanceolate bracts. The plant possesses a well-developed taproot system, and under favourable conditions, the plant height may vary between 0.2 and 1.4 meters. The roots are spindle-shaped.[16]

Macroscopic characters of Fruit

Fruits are Globular, mericarps usually united by their margins forming cremocarp about 2-4 mm in diameter, uniformly brownish yellow or brown, glabrous, sometimes crowned by the remains of sepals and styles, primary ridges 10, wavy and slightly inconspicuous secondary ridges 8, straight and more prominent endosperm coelospermous, odour: aromatic, taste: spicy. The essential oil of the seeds lies inside of the convex longitudinal vittae and gives the plant its characteristic bug smell.[17]

Distribution and Cultivation

C. sativum is believed to have originated in Italy and is now cultivated extensively across Central and Eastern Europe, Mediterranean countries such as Morocco, Malta, and Egypt, and several Asian regions including China, Pakistan, India, and Bangladesh. It is an annual herb that thrives best when sown between October and February, with flowering typically occurring from June to July. The crop prefers a cool climate during its early growth phase and warmer conditions at maturity. Loamy to moderately heavy soils with minimal irrigation are most suitable for its cultivation. Major commercial producers include Poland, Romania, the Czech Republic, Guatemala, Mexico, and Argentina. India is among the leading producers of coriander seeds, with approximately 5.25×10^5 hectares under cultivation and an annual yield of about 3.10×10^5 tonnes. The global coriander oil market is primarily dominated by India and Ukraine. Due to its extensive use as a flavouring agent in food and cosmetic industries, this plant holds significant economic importance.[18]

Phytochemistry of *C.sativum*

Phytochemical investigations of *C. sativum* have identified a wide range of bioactive compounds distributed throughout different parts of the plant. The above‑ground portions contain numerous phenolic and coumarin derivatives such as ferulic acid, gallic acid, caffeic acid, and salicylic acid, together with coumarins including esculetin, esculin, scopoletin, 4‑hydroxycoumarin, umbelliferone, and dicoumarin. Extraction of these compounds using ether, ethyl acetate, butanol, and 2‑ethyl acetate solvents revealed the predominance of flavonoids such as hyperoside, rutin, hesperidin, vicenin, diosmin, luteolin, apigenin, orientin, dihydroquercetin, catechin, and arbutin.[19]

The leaves and seeds collected at both the mature and young stages contain significant concentrations of carotenoids (β‑carotene and total carotenoids) and tocols (α‑, β‑, γ‑, δ‑tocopherols and α‑, γ‑tocotrienols), which were isolated by solvent extraction with ice‑cold acetone, petroleum ether, or n‑hexane.[20] The fruit and pericarp are rich in fatty acids, mainly petroselinic, linoleic, palmitic, and oleic acids, obtained through successive extraction with water and a chloroform/methanol/hexane mixture followed by thin‑layer chromatography.[21] In addition, sterols such as stigmastanol, β‑sitosterol, and δ‑stigmasterol were retrieved from the seed coat and pericarp using n‑hexane in a Soxhlet apparatus. The plant's aromatic essential oils, principally linalool, camphor, and geraniol, were characterized after hydrodistillation and extraction with 2‑methylbutane.[22]

Pharmacological actions of *C. sativum*

1. Hyperlipidaemic action

C. sativum seed extract contains bioactive compounds such as linalool, flavonoids, and phenolic acids, which contribute to its therapeutic potential. These constituents significantly reduced total cholesterol, triglycerides, and LDL levels, while increasing HDL cholesterol, improving liver function, and enhancing antioxidant activity, thereby offering strong anti-hyperlipidaemic and cardioprotective effects.[23] In addition, coriander supplementation significantly lowered plasma and hepatic triglyceride and cholesterol levels, indicating an improvement in lipid metabolism.[24]

2. Antihypertensive

The study by Hussain et al. (2018) identified phenolic and flavonoid compounds, including caffeic acid, chlorogenic acid, and rutin, in *C. sativum* exhibited strong Angiotensin-Converting Enzyme (ACE) inhibitory activity, suggesting a mechanism for blood pressure reduction. The study concluded that these bioactive constituents may help regulate blood pressure by modulating the renin–angiotensin system and reducing oxidative stress, highlighting coriander as a promising natural source of hypotensive agents.[25]

3. Antioxidant action

The bioactive compounds phenolic compounds, flavonoids, and ascorbic acid in *C. sativum* leaf and stem extracts significantly enhanced antioxidant enzyme activities (SOD, CAT, and GPx), increased glutathione and vitamin C levels, and reduced lipid peroxidation in alloxan-induced diabetic rats, thereby offering strong protection against oxidative stress and tissue damage.[26]

4. Cardioprotective Effects

The cardioprotective action was attributed to the presence of bioactive constituents like linalool, quercetin, and flavonoids, which reduced oxidative stress and myocardial damage. in rats with experimentally induced heart failure. The extract significantly improved cardiac function by modulating endothelin receptor expression (ET_A and ET_B) and enhancing antioxidant defense enzymes such as superoxide dismutase (SOD), catalase (CAT), and glutathione (GSH).[27]

5. Antibacterial Action

The major active constituents of *C. sativum* like linalool, γ-terpinene, α-pinene, camphor, and geraniol were responsible for disrupting bacterial membranes and inhibiting growth and exhibited strong antibacterial activity against common foodborne pathogens such as *Salmonella typhimurium*, *Staphylococcus aureus*, *Escherichia coli*, and *Listeria monocytogenes*.[28] A new antimicrobial peptide was isolated from *C. sativum* that displayed broad-spectrum antibacterial effects against both Gram-positive and Gram-negative bacteria, including *Staphylococcus aureus* and *Escherichia coli*. Along with this peptide, the presence of linalool, borneol, and α-pinene contributed synergistically to the overall antibacterial efficacy of *C. sativum*.[29]

6. Antiulcerogenic action

The review described that the phytoconstituents of *C. sativum* linalool, borneol, camphor, and geraniol significantly reduced ulcer index and gastric lesion formation in animal models. These extracts also increased gastric mucus secretion, reduced gastric acidity, and enhanced antioxidant enzyme levels.[30] *C.sativum* decreased gastric irritation, improved digestion, and reduced the occurrence of ulcer-like symptoms. The compounds linalool, flavonoids, and coumarins were found to strengthen the gastric mucosal barrier, suppress acid secretion, and reduce oxidative injury in the stomach lining showing antiulcerogenic action.[31]

7. Diuretic Action

The extracts of *C. sativum* fruits increased urine output and electrolyte excretion (Na^+ , K^+ , and Cl^- ions) in a dose-dependent manner, indicating a natural diuretic effect comparable to standard diuretic drugs. The activity was mainly attributed to flavonoids, linalool, and coumarins, which promote renal blood flow and enhance glomerular filtration. The results confirmed that *C. sativum* supports fluid balance and blood pressure regulation through its mild and safe diuretic properties.[32]

8. Immunomodulatory action.

The *C. sativum* seed supplementation significantly enhanced both innate and adaptive immune responses, including increased phagocytic activity, lysozyme levels, and total leukocyte count, while reducing oxidative stress and tissue damage and ameliorated lead-induced immune suppression by boosting antioxidant defences and modulating immune cell activity. The bioactive compounds linalool, quercetin, and coumarins were identified as the key constituents responsible for these effects.[33] *C. sativum*, enhanced lymphocyte proliferation, macrophage activation, and increased interferon and interleukin production,

indicating the ability of coriander-derived compounds to stimulate both cellular and humoral immune responses.[34]

9. Antiaging activity

Coriander possesses strong natural antioxidants such as flavonoids and phenolic compounds that reduce oxidative stress in skin cells, preserve collagen structure, and help maintain skin elasticity, thereby delaying visible signs of aging.[35] Leaf extract significantly increased procollagen type I levels and reduced MMP-1 expression in UVB-exposed fibroblasts, along with showing strong antioxidant and ROS-scavenging activity, thus protecting the skin from photoaging and wrinkle formation.[36]

10. Antidiabetic activity

C. sativum seeds were investigated for their antidiabetic potential using isolated rat pancreatic islets and diabetic animal models. The results showed that coriander extract stimulated insulin release from pancreatic β-cells, exhibited insulin-like activity, and significantly lowered blood glucose levels in diabetic rats, confirming its hypoglycaemic effect. Coriander demonstrated blood glucose–lowering properties, improved insulin sensitivity, and supported glucose metabolism regulation, validating its traditional use as a natural antidiabetic and metabolic-supportive herb.[32]

11. Antiemetic activity

Experimental evaluation of the whole-plant extract in the chick emesis model revealed 55% inhibition of copper-sulfate-induced retching, demonstrating protective activity comparable to the standard drug chlorpromazine.[37] GC–MS profiling of *Dhanyaka* essential oil identified β-linalool as the major volatile constituent (63.20%), along with flavonoids and glycosides that contribute to its antiemetic and gastrointestinal regulatory effects.[38]

DISCUSSION

Dhanyaka (Coriandrum sativum Linn.) has been extensively utilized in Ayurveda for its *Trishna-nigrahana*, *Sitaprasamana*, *Dipana-Pacana*, *Mutrala*, and *Grahi* actions, and the findings of modern research strongly corroborate these traditional claims. The classical *Rasa-Panchaka*-predominantly *Kashaya*, *Tikta*, and *Madhura* rasa with *Laghu-Snigdha guna*, *Uṣṇa/Sita virya* (depending on authors), and *Madhura vipaka*-supports its broad applicability in conditions involving *Pitta-Kapha* imbalance, impaired *Agni*, and gastrointestinal

disturbances. Its repeated mention in *Brihat-Trayi* and *Nighantus* reflects its wide therapeutic relevance.

Contemporary phytochemical studies identify *Dhanyaka* as a rich source of flavonoids, phenolic acids, coumarins, carotenoids, tocols, fatty acids, sterols, and essential oils-particularly linalool. These molecules exhibit potent antioxidant, anti-inflammatory, metabolic, and antimicrobial potential, offering a pharmacological foundation to classical descriptions. The predominance of linalool, which imparts the characteristic aroma, closely correlates with the plant's antimicrobial, antiemetic, and gastroprotective properties reported in modern studies.

Pharmacological investigations have validated many of its classical indications. Its hypolipidaemic and cardioprotective effects align with the traditional role in Pitta-Kapha disorders, showing improvements in lipid metabolism, oxidative stress, and cardiac biomarkers. The antioxidant and immunomodulatory actions parallel its classical *Rasayana-like* attributes, supporting tissue nourishment and resistance to disease. Its antihypertensive, diuretic, and antiulcerogenic effects further confirm its systemic benefits, providing mechanistic explanations for classical uses in conditions of thirst, digestive disturbances, and urinary complaints. The antibacterial and antiemetic actions validate its use in gastrointestinal infections and nausea. Additionally, emerging evidence of antiaging and antidiabetic effects expands the contemporary relevance of *Dhanyaka*, aligning with modern lifestyle-related health concerns.

Overall, this review illustrates a strong convergence between classical Ayurvedic understanding and modern scientific evidence. *Dhanyaka* emerges as a multipotent herb with validated actions across metabolic, gastrointestinal, cardiovascular, dermatological, and immune systems. Future studies focusing on standardization, dose–response relationships, molecular mechanisms, and clinical trials will help establish its therapeutic potential more robustly and support its integration into evidence-based Ayurvedic and integrative medical practice.

CONCLUSION

Coriander has been widely used over the past centuries for both culinary and medicinal purposes. Classical texts highlight its *Trishna-nigrahana*, *Dipana-Pachana*, *Mutrala*, and *Grahi* properties, indicating its vital role in maintaining *Agni*, balancing *Pitta-Kapha doshas*,

and promoting gastrointestinal health. Modern phytochemical and pharmacological studies substantiate these attributes, revealing bioactive compounds such as linalool, flavonoids, and phenolic acids that confer antioxidant, anti-inflammatory, cardioprotective, and antimicrobial effects. The concurrence of traditional and experimental insights affirms Dhanyaka as a multipotent herb with relevance across metabolic, digestive, cardiovascular, and immune domains. Further research emphasizing pharmacokinetic profiling, clinical validation, and formulation standardization will strengthen its position as an evidence-based Ayurvedic drug and a promising nutraceutical for global health and wellness.

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