Curcuma longa l. Specie ecological adaptation conditions and biological trials

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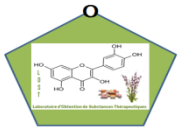

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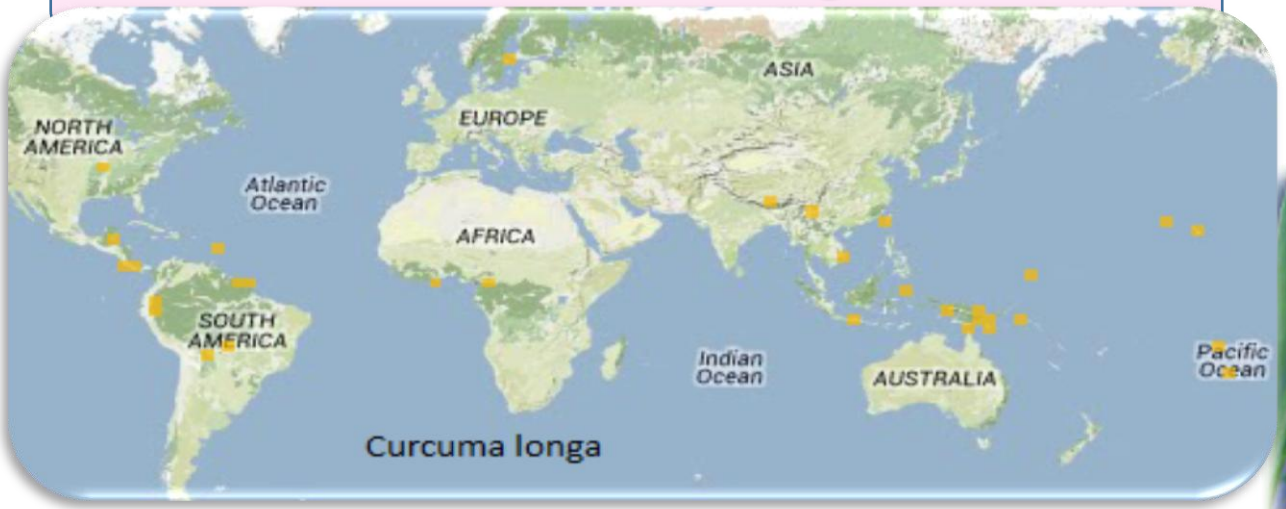
Abstract: Interest on *Curcuma Longa* L specie also called "Golden spice", is increasing due to its several applications in different fields: culinary, pharmaceutics, nutraceutics, cosmetics, agro-industry...
Thus, the present work deals with ecological conditions for the adaptation of such specie, qualitative and quantitative phytochemical study and biological applications as *in vitro* antioxidant and antibacterial activities.
Investigations on ecological conditions: soil and climate; exhibit and a possible adaptation of studied specie in North-eastern Mediterranean border of Algeria. Analysis of the secondary metabolites contained in *Curcuma longa* L. rhizomes extract exhibit 18.125 mg / g EAG for polyphenols and 5.718 mg / g EQ for flavonoids.
Evaluation of the antioxidant power was carried out using the DPPH free radical scavenging test, showed a strong antioxidant activity (99%) greater than used standards ascorbic acid (96%) at the same concentrations. Antimicrobial activity, was carried out by the disk diffusion method, obtained results showed an efficacy against most of tested strains even at very low doses.
According to the encouraging obtained results, it would be interesting to try implantation of this specie by local start-ups and enhance it by extending the range of applications.
Keywords: *Curcuma Longa* L, Eco-adaptation, secondary metabolites, antioxidant, antimicrobial activity.

Curcuma longa.L



Genre :
Curcuma
Famille :
Zingibéracée
Ordre :
Zingibérale

Originaire du Sud de l'Asie

Results and Discussion

Enquête Ethnobotanique :

- Riche potentiel
- Intérêt économique
- 3 types de climats en Algérie

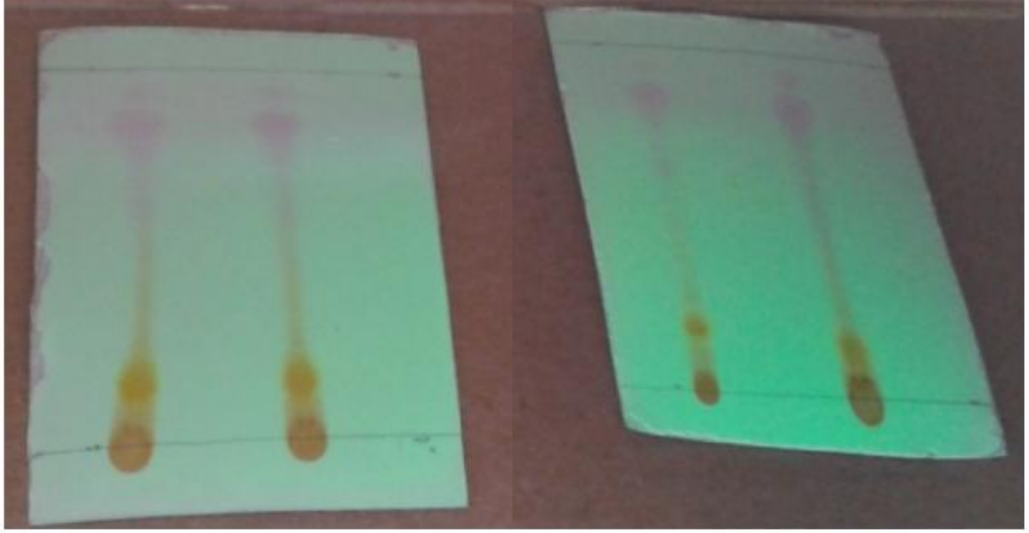
Conditions	Parametres	Ecologie de la plante	Région étudiée	Compatibilité
Climat	Température	Démarrage : 30°-35° Tallage : 25° - 30° Initiation des rhizomes : 20° -25° Développement : 18° - 20°	/ Jun-aout :25°-30° Aout-sep :20°-25° Sep- oct : 18°-20°	- + + + +
	Précipitation	1000-2000 ml	> 900 ml	+
	Humidité	Elevée	Un domaine humide	+
	Luminosité	Endroits ombrés a mi-ombrés	Végétation foréstière étendue	+
Sol	Type	Fertile /argileux	Sols podzolique (silice ,argile)	+
	pH	5 – 7.5	8--9	-
	Drainage	Bien drainé	Oueds	+
Localisation	Longitude	Tropicale/subtropicale	Subtropicale	+

EXTRACTION

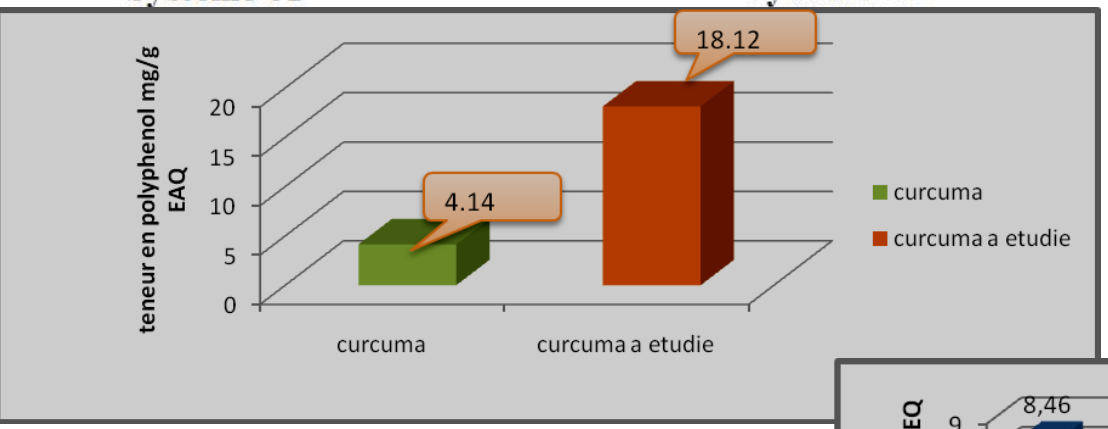
Séchage + broyage

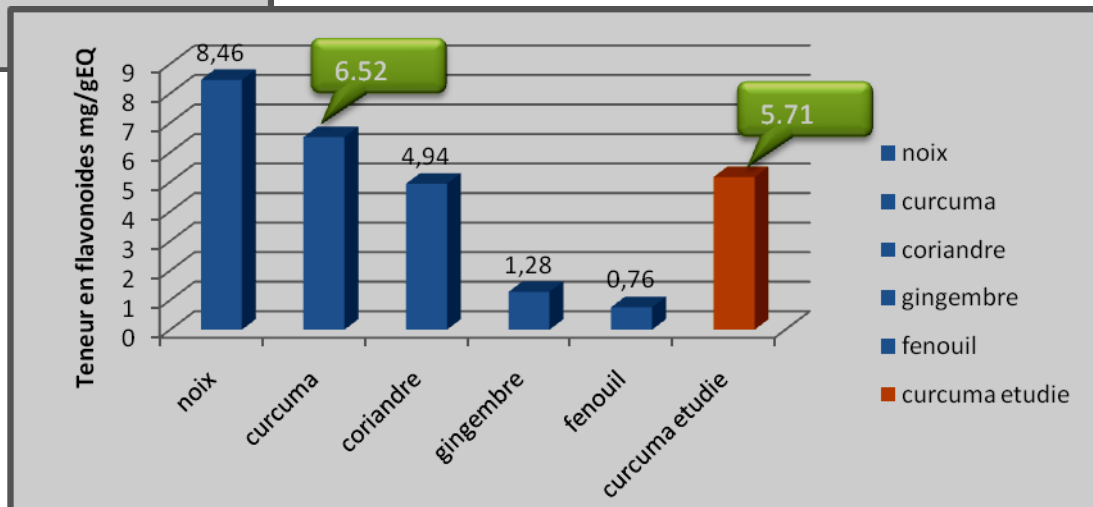
Evaporation au Rotavapor

PHYTOCHEMISTRY

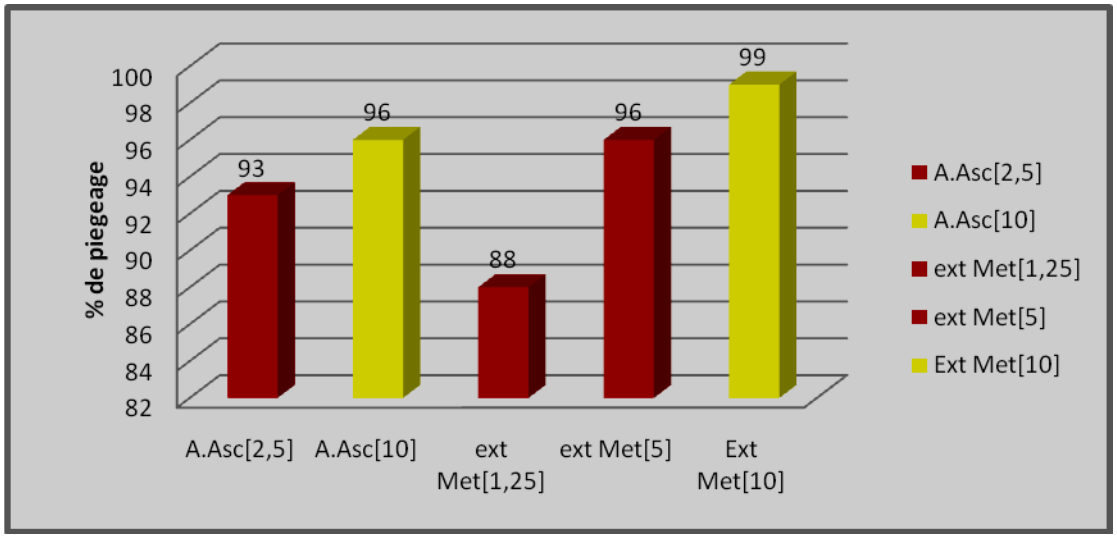


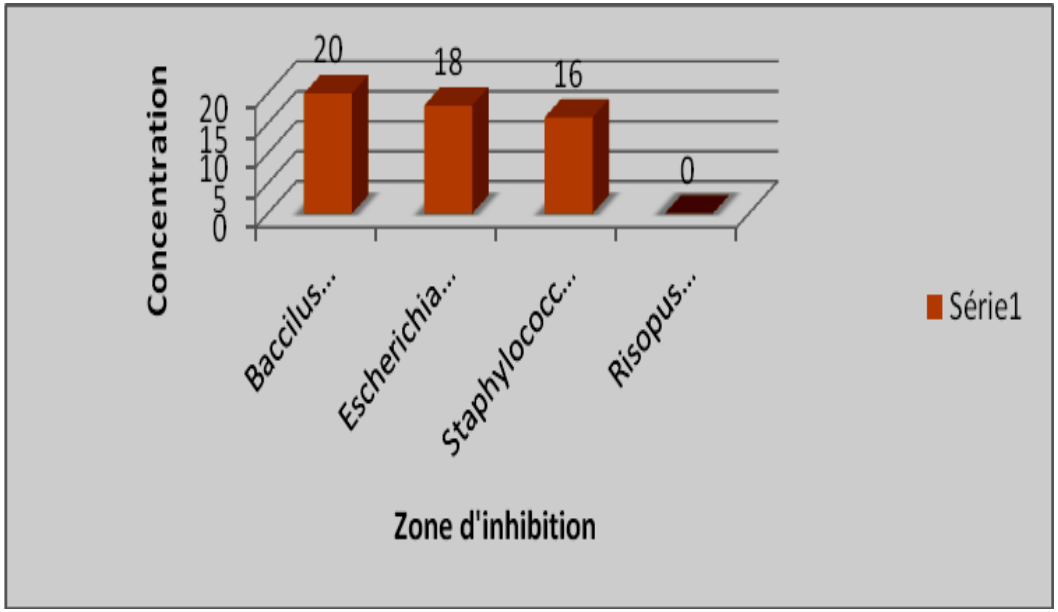
Système 01 Système 02





BIOLOGICAL TESTS

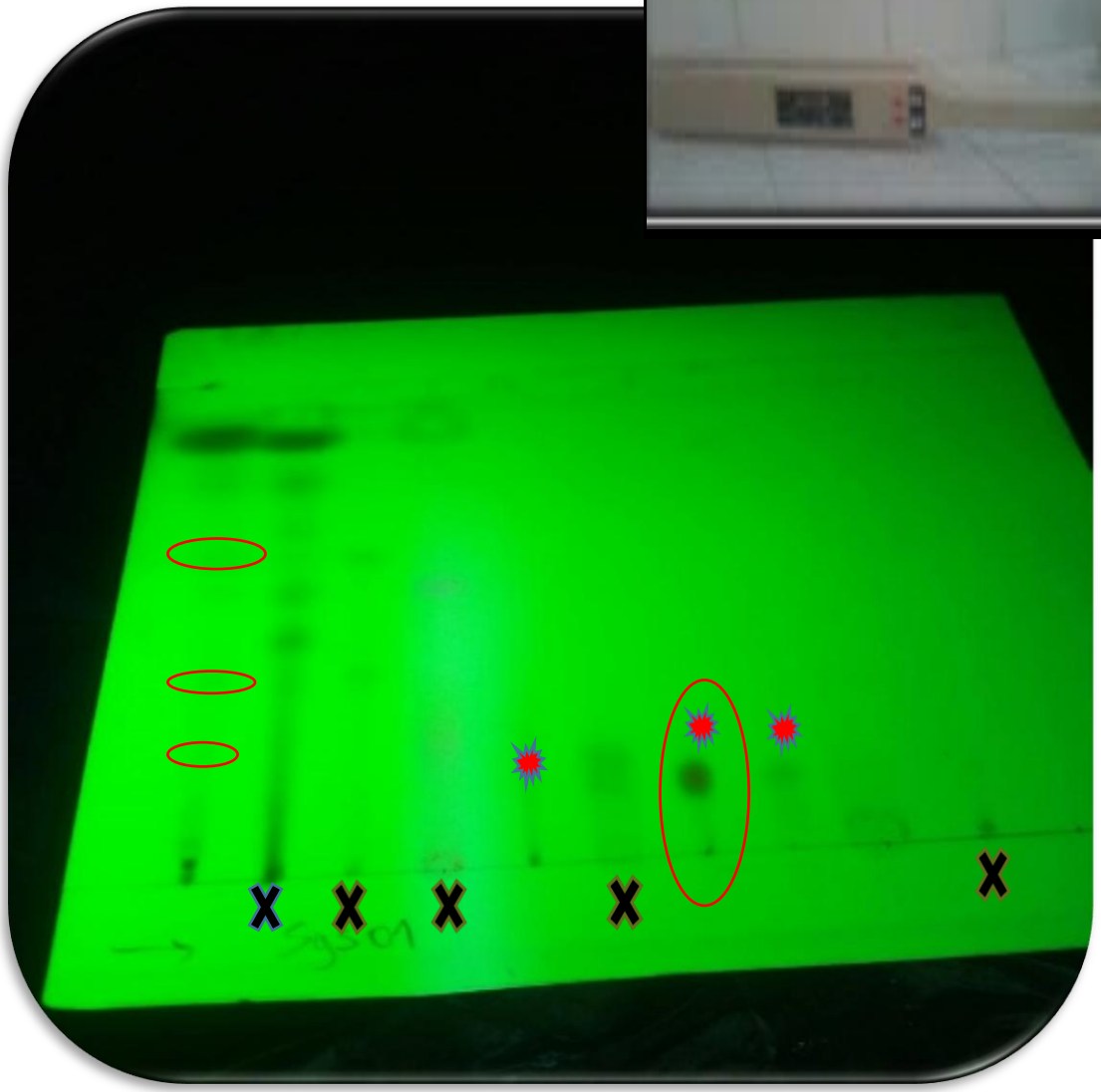


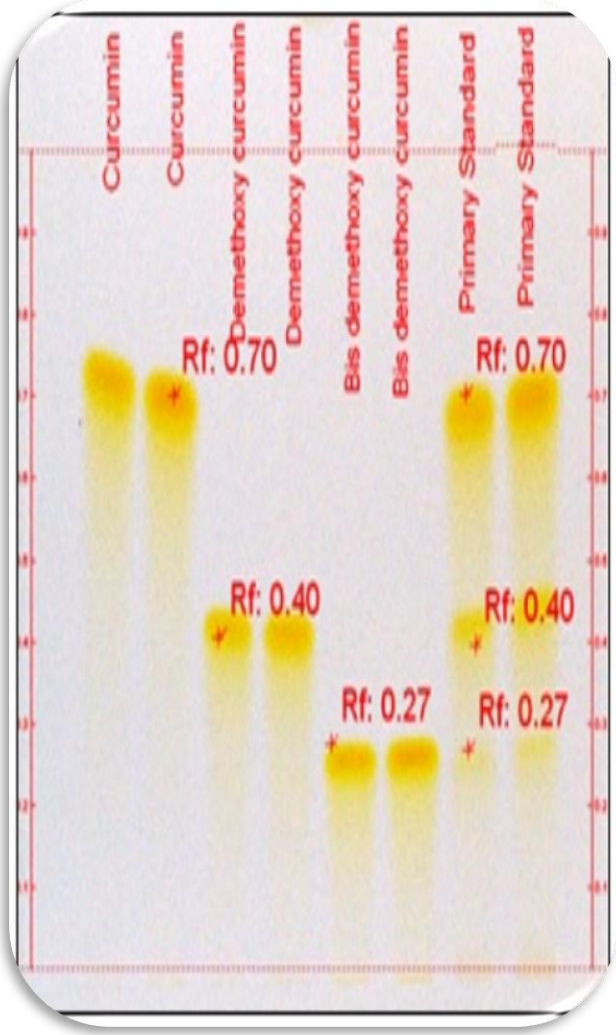


Séparation des Curcuminoides :

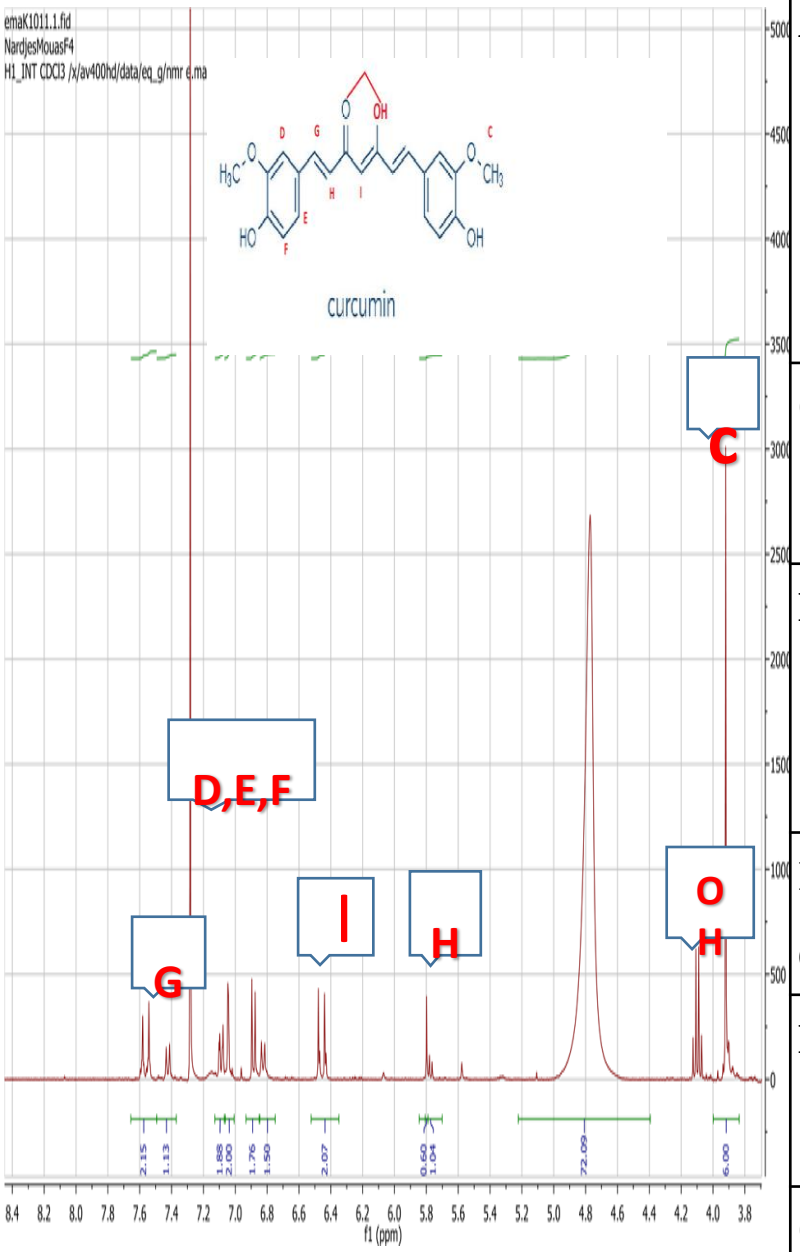
Récupération de différentes fractions

Qualitative analysis :





Revathy.Set *al* , *année?*



Attribution	Déplacement chimique δppm CDCl3	Réf Déplacement chimique δppm CDCl3
C	3.90	3.9 (Nagahama et *al* ,2015)
		3.8 (SarikaRachel, JamesNirmala 2016)
H	5.79-5.8	5.7-5.8 (Nagahama et *al* ,2015)
		6.1(SarikaRachel, JamesNirmala 2016)
I Forme céto-énol	6.4-6.5	6.5 (Nagahama et *al* ,2015)
		6.8(SarikaRachel , JamesNirmala 2016)
D,E,F	6.8-7.3	6.8-7.3 (Nagahama et *al* ,2015)
		6.8-7.2(SarikaRachel ,JamesNirmala 2016)
G	7.55	7.6 (Nagahama et al ,2015)
		7.7(SarikaRachel,

Conclusions The present study highlighted a possible eco-adaptation of *Curcuma longa* L. specie in the North-eastern region of Algeria, it also reports its efficient extraction, qualitative and quantitative phytochemical study and biological applications as *in vitro* antioxidant and antibacterial activities, which revealed a very high antioxidant potential for DPPH radical scavenging test and antimicrobial activity against *Staphylococcus aureus* ATCC 25923 ; *Bacillus subtilis* ATCC 6633, *Escherichia coli* ATCC 2592 *and Rhizopus oryzae* M491890.1 referential strains, in addition to the isolation and identification of major component Curcumin.

Obtained results, encourage local young start-ups to invest this field from raw material production to transformed products commercialization: cosmetics, nutraceuticals, functional foods…

Acknowledgments

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