

Estrazione e caratterizzazione microbiologica di oli essenziali ottenuti da Origanum majorana L.

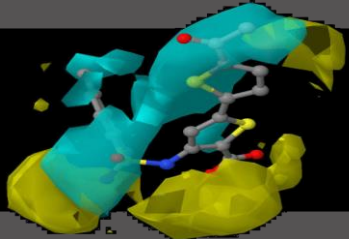


SAPIENZA
UNIVERSITÀ DI ROMA

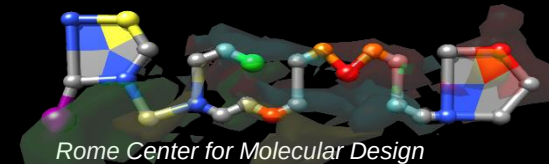
Facoltà di Farmacia e Medicina
Corso di Laurea in Scienze
Farmaceutiche Applicate
Tesi di Laurea Sperimentale

Laureanda: Giada Santosuosso
Matricola: 1652591

Relatore: Prof. Rino Ragno
Correlatrice: Dott.ssa Alessandra Oliva



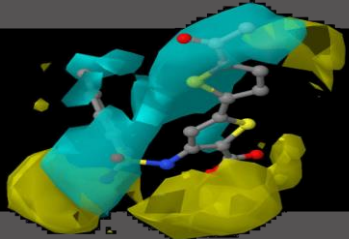
SOMMARIO



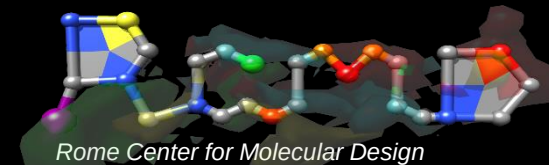
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1. Scopo della tesi
2. Oli essenziali
3. Pianta sottoposta allo studio
4. Metodo sperimentale
5. Saggi microbiologici
6. Risultati:
 - rese e tempi di distillazione
 - attività antimicrobica
7. Conclusioni



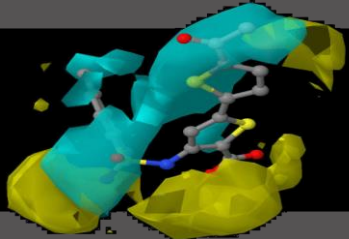


Scopo della tesi

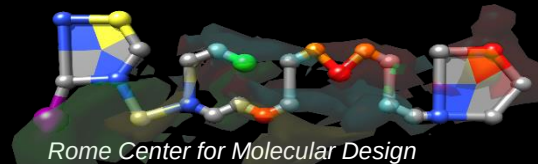


Applicazione di un sistematico processo estrattivo per determinare il giusto intervallo di tempo in cui poter estrarre l'olio essenziale dalle piante aromatiche, mediante idrodistillazione e distillazione in corrente di vapore protratte per 24h e successiva valutazione dell'attività antimicrobica dei campioni estratti





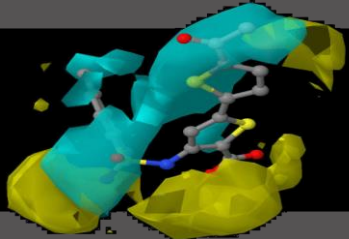
Gli Oli Essenziali



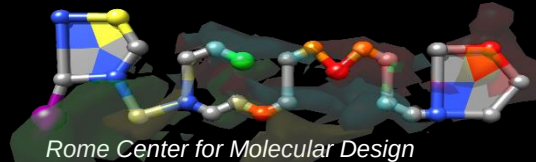
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- miscele complesse di sostanze aromatiche, volatili e oleose
- generalmente con densità minore di quella dell'acqua
- poco solubili in acqua e solubili nei solventi organici



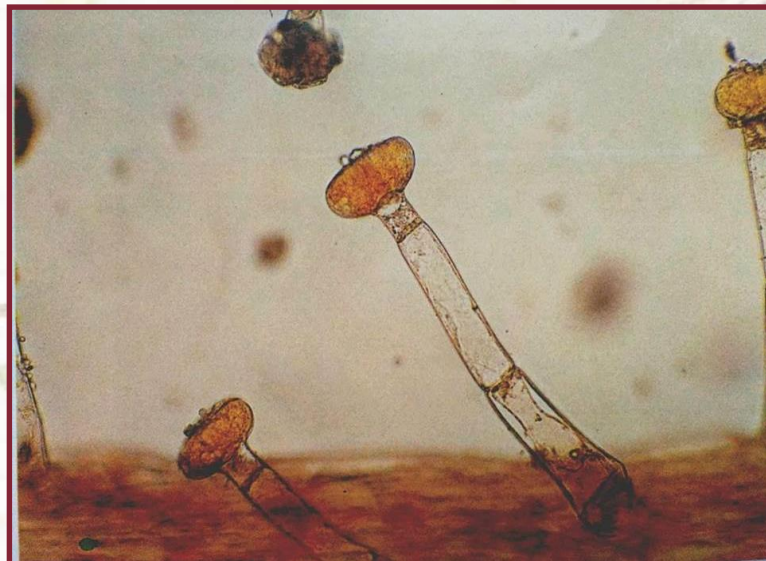
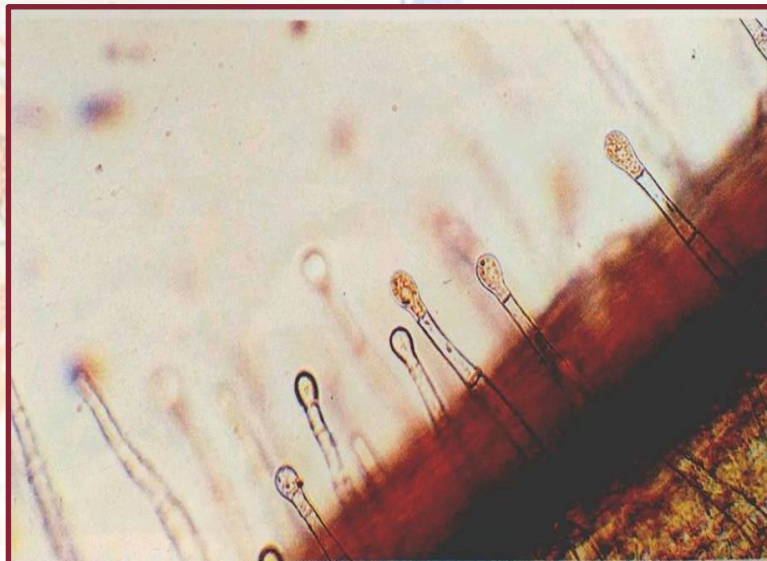


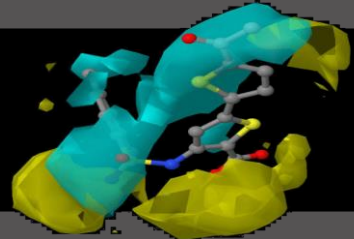
Oli Essenziali



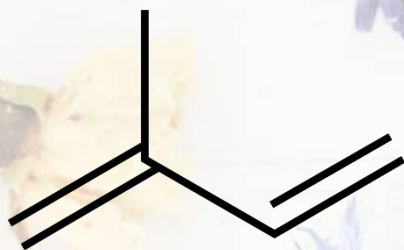
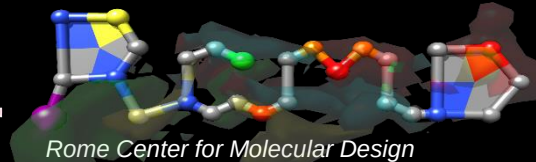
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Contenuti in diverse piante e localizzati in tessuti specifici





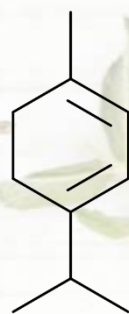
Chimica degli Oli Essenziali



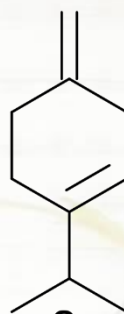
isoprene

TERPENI

Monoterpeni



α



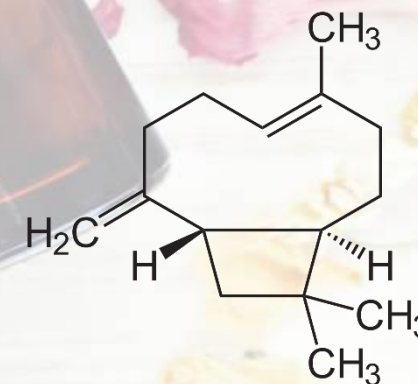
β



γ

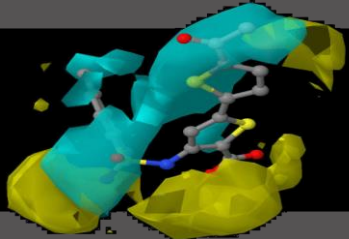
terpinene

Sesquiterpeni

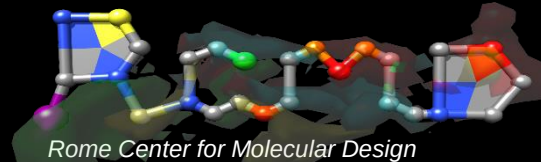


β -cariofillene



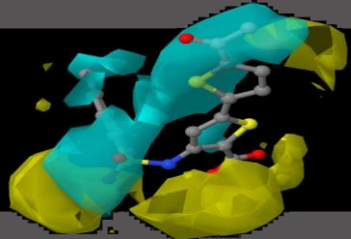


Attività farmacologica degli Oli Essenziali

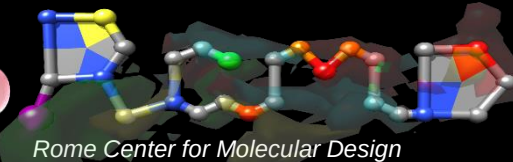


- Antibatterica
- Antimicotica
- Antivirale
- Antiossidante
- Spasmolitica
- Antitumorale
- Antinfiammatoria





Pianta sottoposta allo studio



A. MINARDI & FIGLI VIA BONCELLINO, 32 48012 BAGNACAVALLO (RA) Lavorazione e c
Tel. 0545 61460 - Fax 0545 80686 - E-mail: info@minardierbe.it - http://www.minardierbe.it

MP0356 MAGGIORANA FOGLIE MONDE

LOTTO n H-110917191017 PRODUZIONE 2017 LUOGO D'ORIGINE EGITTO
DA CONSUMARSI PREFERIBILMENTE ENTRO FINE: 10/2020 PESO NETTO KG. 1,00
A. MINARDI & FIGLI S.R.L. BAGNACAVALLO

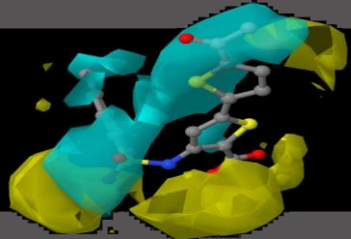
MP0356 MAGGIORANA FOGLIE MONDE

NOME BOTANICO	ORIGANUM MAJORANA L.
FAMIGLIA	LABIATAE
LUOGO D'ORIGINE	EGITTO
NATURA DELLA PIANZA	COLTIVATA
PRODUZIONE	2017
GENERE MERCEOLOGICO	PIANTA UFFICIALE L. 99.06/01/31
LOTTO n	H-110917191017
CONFEZIONATO	03.2018
ALTRE INDICAZIONI	
PESO NETTO KG	1,00
DA CONSUMARSI PREFERIBILMENTE ENTRO FINE:	10/2020
AVVERTENZE	

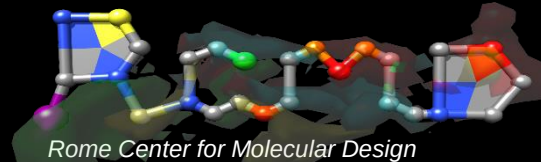
CAMPIONATURA GRATUITA

Origanum majorana L.
Lamiaceae



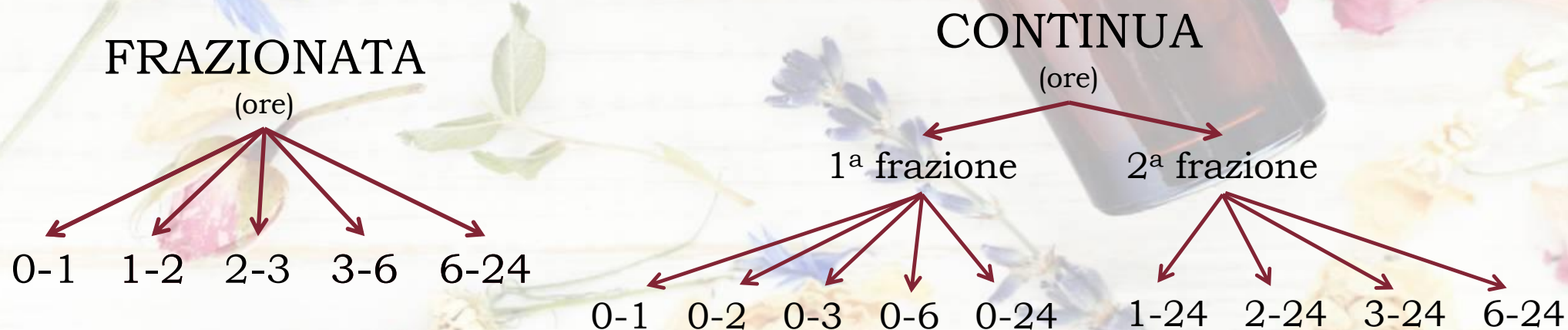


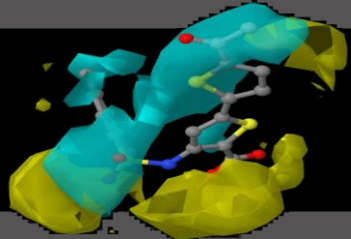
Protocollo sperimentale



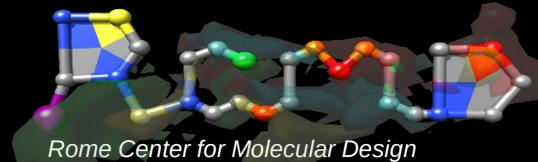
Estrazione sistematica degli oli essenziali mediante processo di idrodistillazione (ID) e distillazione in corrente di vapore (CV).

Procedure di distillazione svolte in modalità:

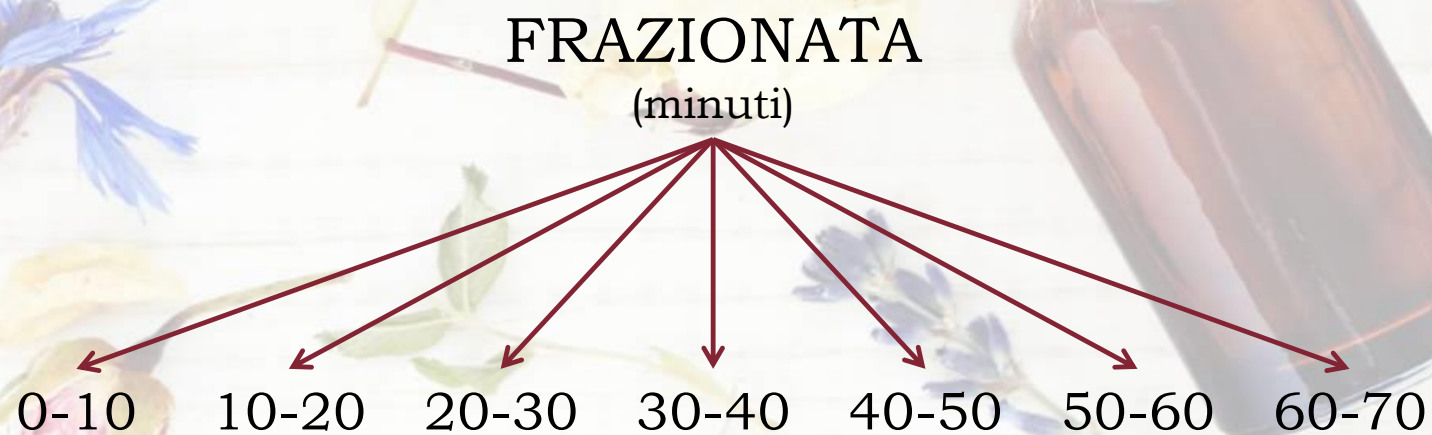


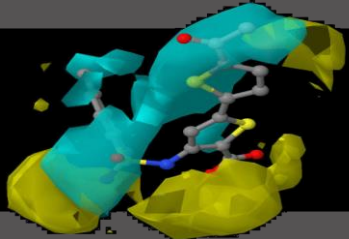


Protocollo sperimentale

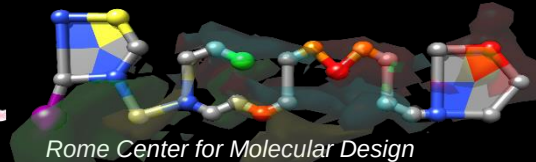


ID e CV frazionata a ristretti intervalli di tempo.





Strumentazione utilizzata



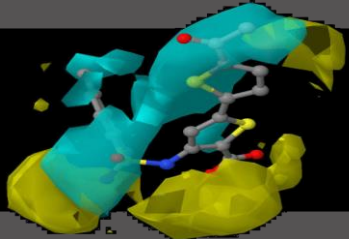
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Idrodistillazione

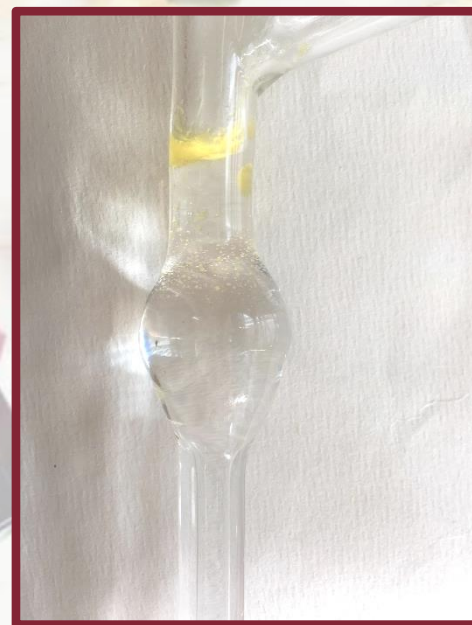
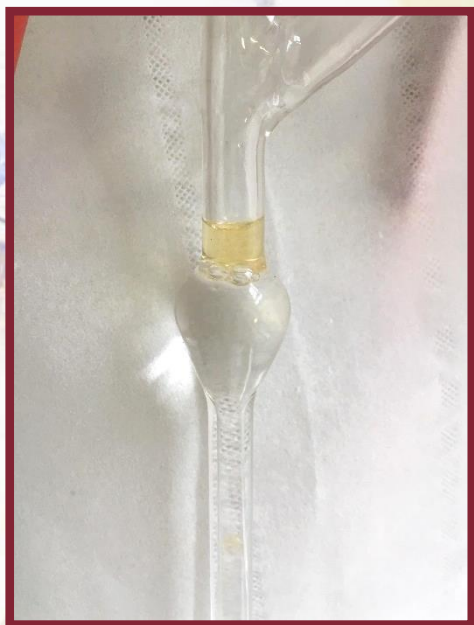
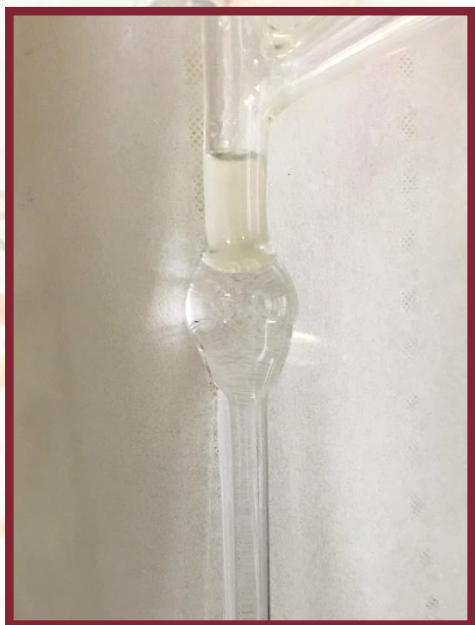
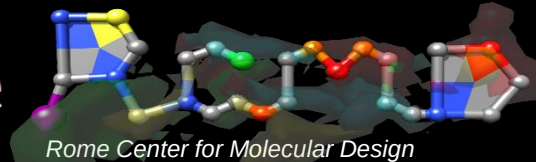


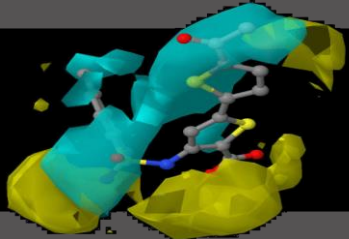
Distillazione in Corrente di Vapore



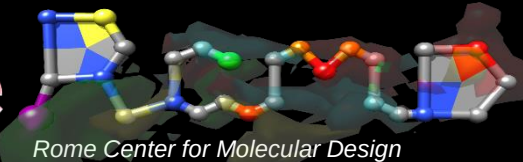


Raccolta dell'olio essenziale





Estrazione ed anidrificazione

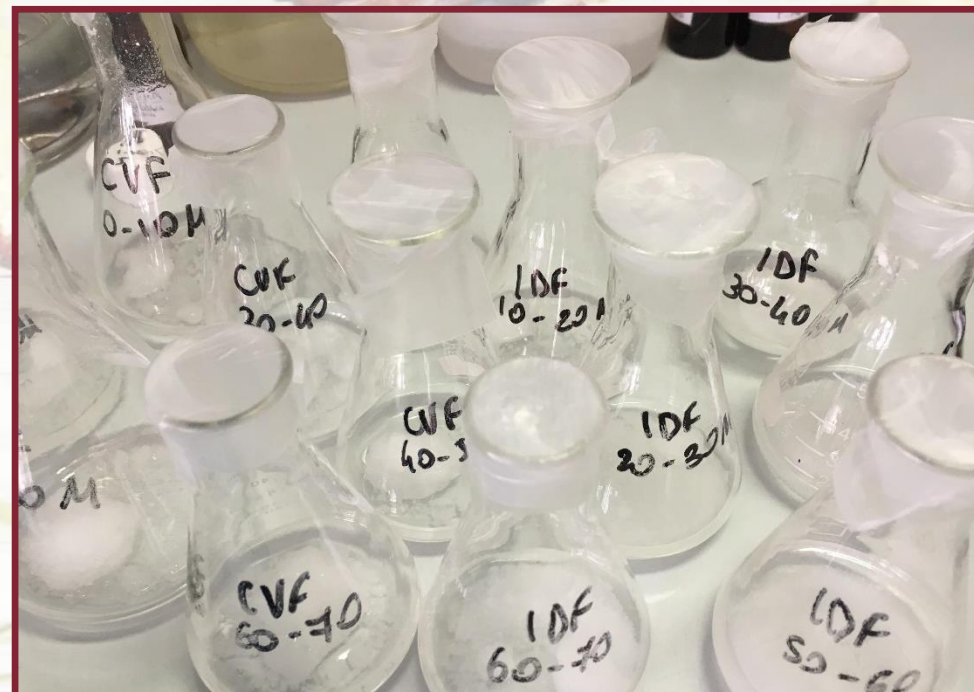


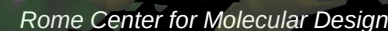
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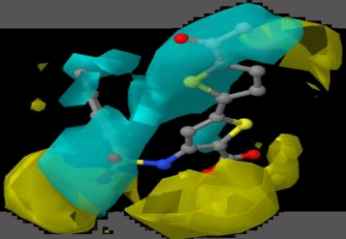
Estrazione
con etere dietilico



Anidrificazione mediante
sodio solfato anidro

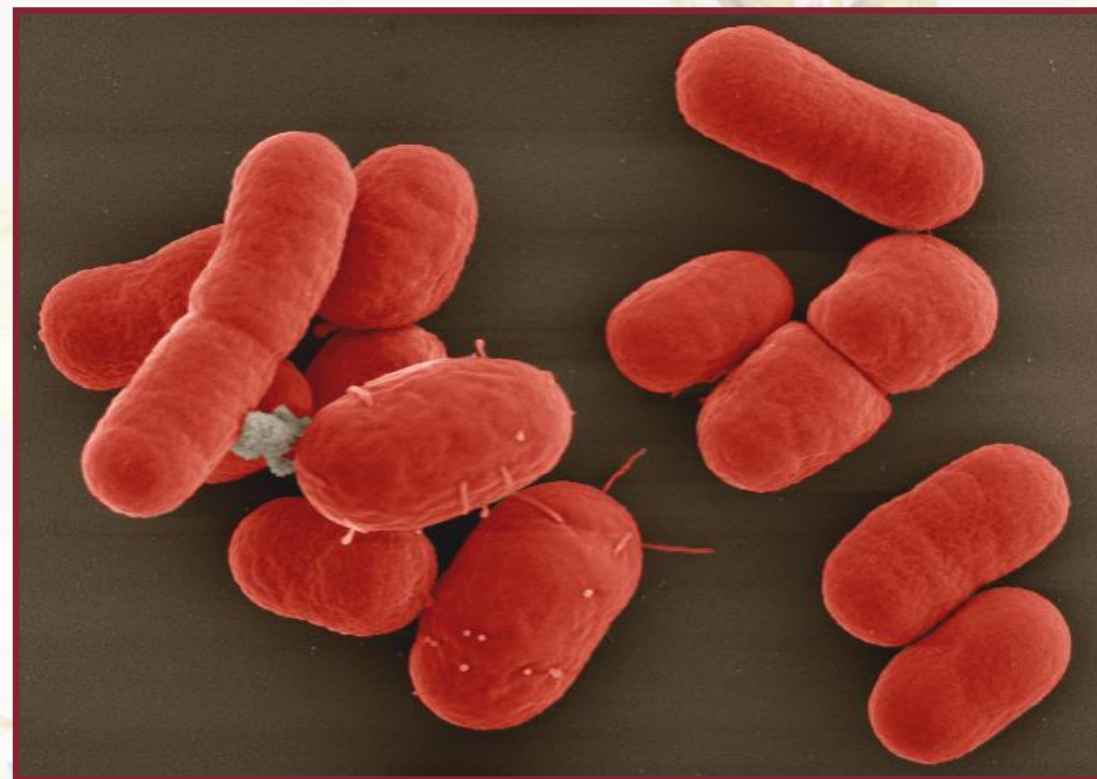


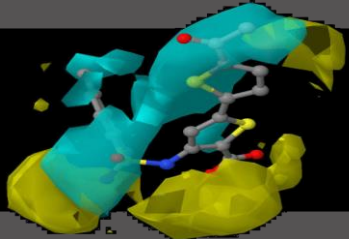




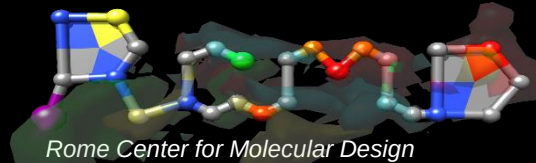
Acinetobacter baumannii

- isolato clinico
multi-antibiotico-resistente
- infezioni nosocomiali





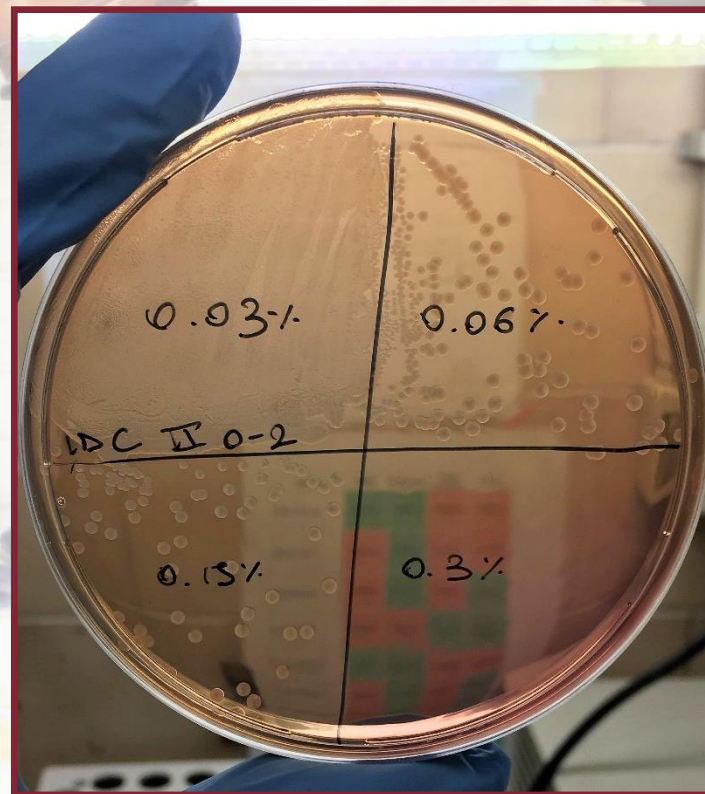
Saggi Microbiologici

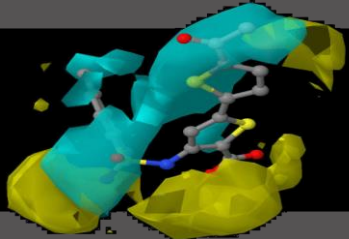


MIC

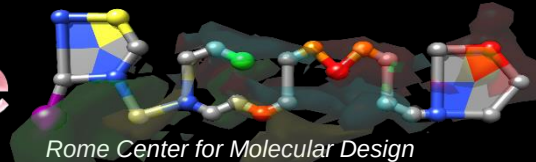


MBC





Rese e Tempi di distillazione



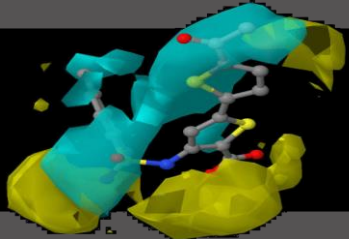
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La resa dell'OE è stata calcolata:

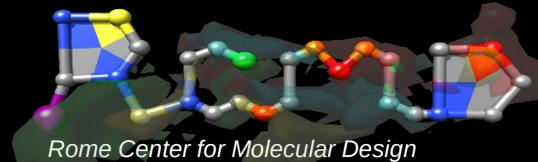
$$rOE(\%) = \frac{mOE(g)}{mS(g)} \times 100$$

Le rese percentuali indicate nelle tabelle seguenti sono da intendersi quali valori medi delle estrazioni effettuate in duplicato.

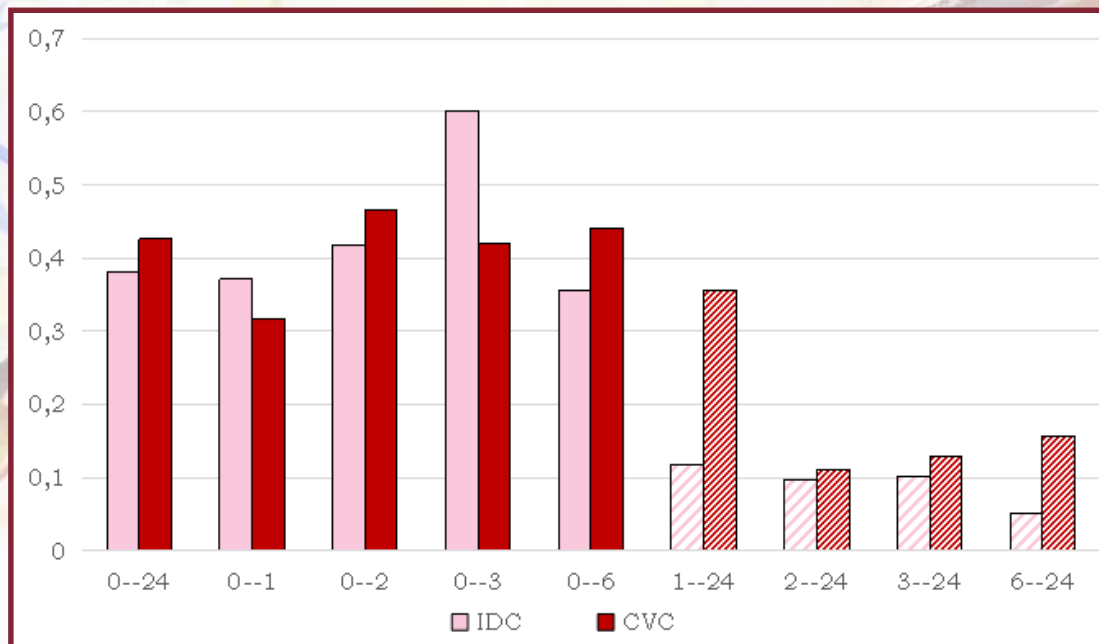


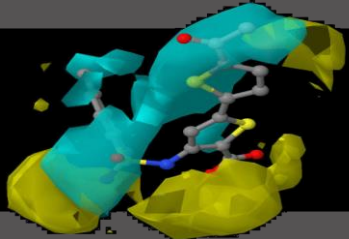


Confronto IDC / CVC

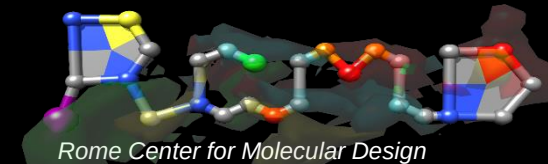


IDC CVC	1ª frazione Resa media %		2ª frazione Resa media %			Totale Resa media %	
Ore	IDC	CVC	Ore	IDC	CVC	IDC	CVC
0-1	0,3714	0,3163	1-24	0,1178	0,3558	0,4892	0,6721
0-2	0,4171	0,4665	2-24	0,0971	0,1106	0,5142	0,5771
0-3	0,6011	0,4188	3-24	0,1006	0,1288	0,7017	0,5476
0-6	0,3568	0,4408	6-24	0,0503	0,1569	0,4071	0,5977
0-24	0,3820	0,4262				0,3820	0,4262

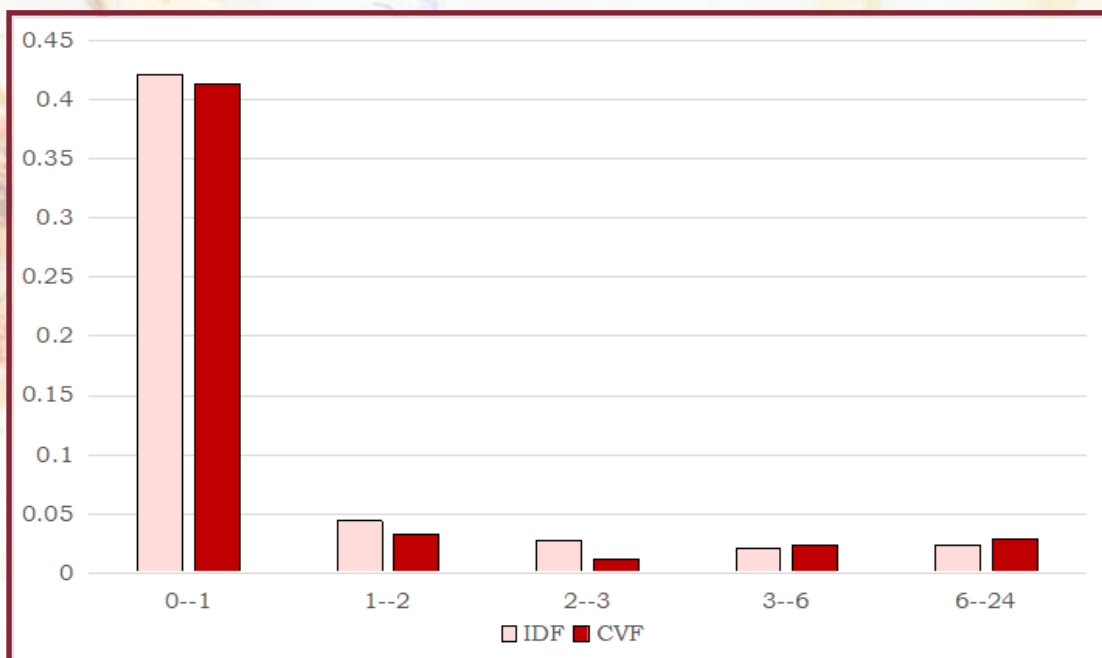


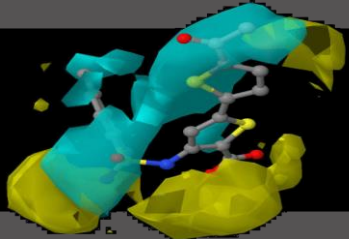


Confronto IDF / CVF

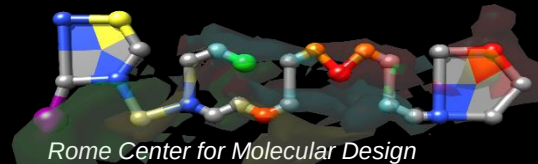


Ore	Resa media %		Percentuale estratta	
	IDF	CVF	IDF	CVF
0-1	0,4213	0,4141	78,6%	81,2%
1-2	0,0438	0,0329	8,2%	6,5%
2-3	0,0268	0,0111	5,0%	2,2%
3-6	0,0209	0,0236	3,9%	4,6%
6-24	0,0233	0,0283	4,3%	5,5%
Totale	0,5361	0,5100	100%	100%



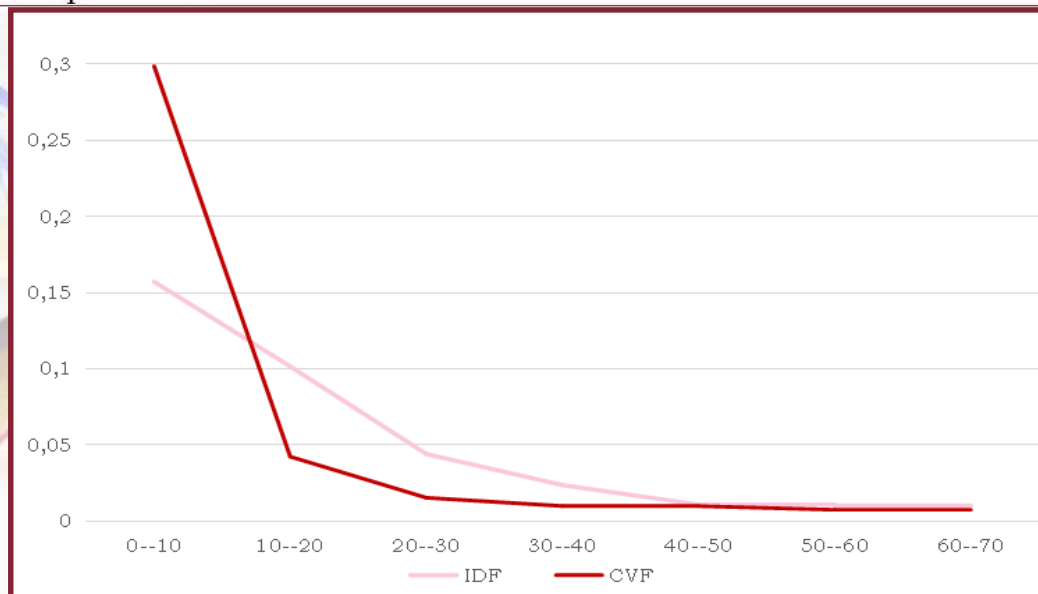


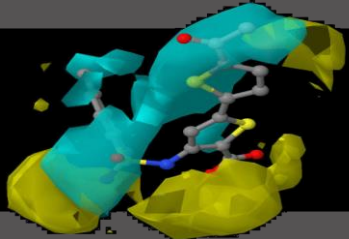
Confronto IDF / CVF a intervalli ristretti



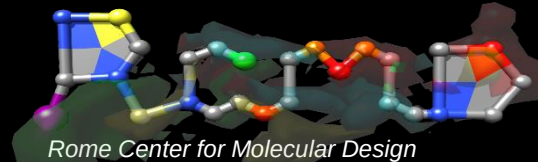
Qtà pianta: Minuti	IDF grammi OE	100g resa %	CVF grammi OE	100g resa %
0-10	0,1572	0,1572	0,2988	0,2988
10-20	0,1016	0,1016	0,0424	0,0424
20-30	0,0441	0,0441	0,0154	0,0154
30-40	0,0237	0,0237	ND	ND
40-50	0,0109	0,0109	0,0099	0,0099
50-60	0,0103	0,0103	0,0075	0,0075
60-70	0,0097	0,0097	0,0068	0,0068
Totale	0,3575	0,3575	0,3808	0,3808

ND = non disponibile

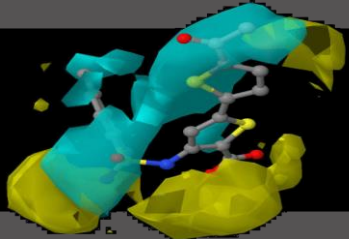




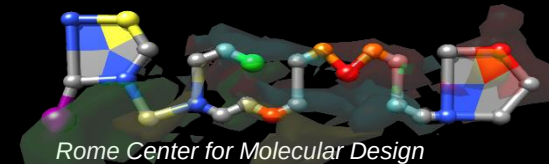
Valutazione dell'attività antibatterica



Campione		MIC	MBC
Frazione temporale	Tipologia estrazione	%	%
0-1 h	CVF I	0.03	0.03
0-1 h	CVF II	0.03	0.03
0-1 h	IDC I	0.03	0.07
0-1 h	IDC II	0.03	0.07
0-1 h	IDF I	0.07	0.07
0-1 h	IDF III	0.07	0.07
0-1 h	CVC I	0.15	0.15
0-1 h	CVC II	0.15	0.30
0-2 h	CVC I	0.03	0.15
0-2 h	IDC I	0.03	0.07
0-2 h	IDC II	0.03	0.07
0-2 h	CVC II	0.15	0.15
0-3 h	CVC II	0.03	0.03
0-3 h	CVC I	0.07	0.07
0-3 h	IDC I	0.07	0.07
0-3 h	IDC II	0.07	0.07
0-6 h	CVC I	0.03	0.03
0-6 h	CVC II	0.03	0.03
0-6 h	IDC I	0.03	0.03
0-6 h	IDC II	0.03	0.03
0-24 h	CVC I	0.03	0.03
0-24 h	CVC II	0.07	0.07
0-24 h	IDC II	0.07	0.07
1-2 h	IDF III	0.07	0.07
1-24 h	CVC I	0.07	0.07
1-24 h	IDF II	0.15	0.15
0-10 min	CVF	0.07	0.07
0-10 min	IDF	0.07	0.07
10-20 min	IDF	0.07	0.07

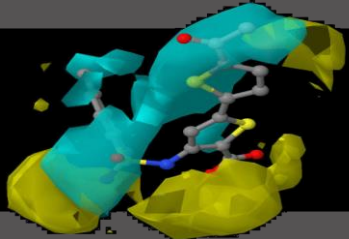


Conclusioni

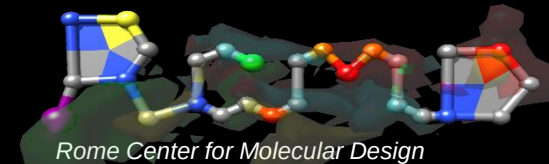


- Acquisizione e applicazione delle tecniche di distillazione in corrente di vapore e idrodistillazione ed esecuzione dei saggi microbiologici per la valutazione dell'attività antibatterica
- Rese sovrapponibili per le varie frazioni di ID e CV
- Resa maggiore intervallo 0-1h
- Attività antibatterica spiccata, MIC e MBC 0.03% v/v
- Analisi chimica in corso





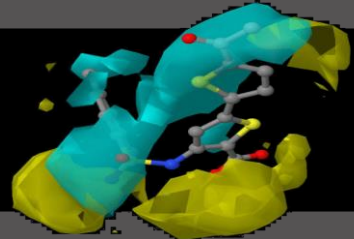
Ringraziamenti



- Il Prof. Rino Ragno
- La Dott.ssa Alessandra Oliva
- La Prof.ssa Stefania Cesa
- L'azienda Minardi & Figli
- I colleghi di laboratorio:

Marcela, Maria Claudia, Silvia, Massimiliano





Grazie per l'attenzione

