

BDEE
2021

The 1st International Electronic Conference
on Biological Diversity, Ecology and Evolution
15-31 MARCH 2021 | ONLINE

Chaired by PROF. DR. MICHAEL WINK



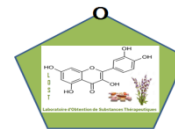
Biological assessment of *Cinnamomum zeylanicum* percolate

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Abstract: *Cinnamomum zeylanicum* gender, a wildy used plant as spice and medicinal plant, is investigated in both chemical and biological fields, since development of bio-guided trials on medicinal plants therapeutic target has increased recent years through pharmacology which is interested in discovering new molecules expressing a therapeutic activity and development of useful drugs by selecting the most active fraction and isolating the active compound responsible of the therapeutically effect.

Therefore, identification and quantification analysis of main bioactive compounds were performed in order to undergo bio-guided tests using several solvents' polarities to evaluate its *in vitro* antimicrobial potential. To achieve this objective, qualitative and quantitative methods were used to identify bioactive compounds of the obtained extracts. The *in vitro screening of* antimicrobial effect was evaluated on 10 bacteria and 2 funguses by disk diffusion method which gave almost very interesting results for all tested pathogens in addition to richness in secondary metabolites.

Keywords: Medicinal plants; bioactive compounds; bi assays; antibacterial activity.

Results and Discussion

La cannelle

Utilisée en Egypte ancienne, en Chine puis en Europe.

Originaire du Sri Lanka et du sud de l'Inde



Classification:

Famille: Lauraceae.

Genre: Cinnamomum.

Nom binominal: *Cinnamomum zeylanicum*.

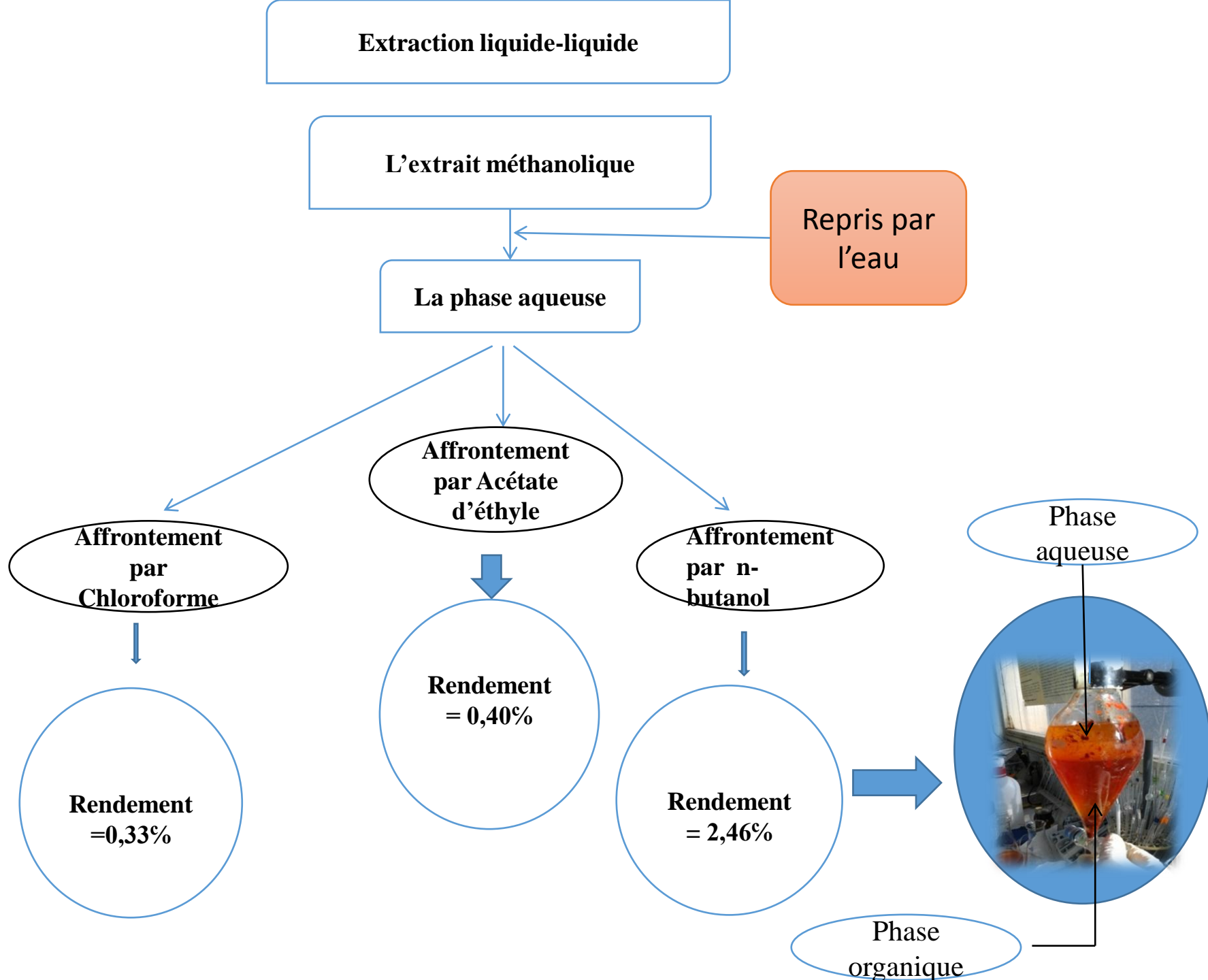
Phytochemistry

Leaves

- Phénols
- Esters
- Sesquiterpenes
- Alcools phénolés
- Aldehydes aromatiques
- Dioxydes
- Cétones

Bark

- Aldehydes aromatiques
 - Phénols
 - Alcools
- monoterpéniques
- Sesquiterpenes
 - Acides
- Pyranocoumarines
 - cétones
- Furanocoumarines



Chloroforme extract

Quatre spots de couleur **jaune**-orange après révélation chimique, chaque spot désigne un composé différent de la classe des flavonoïdes.

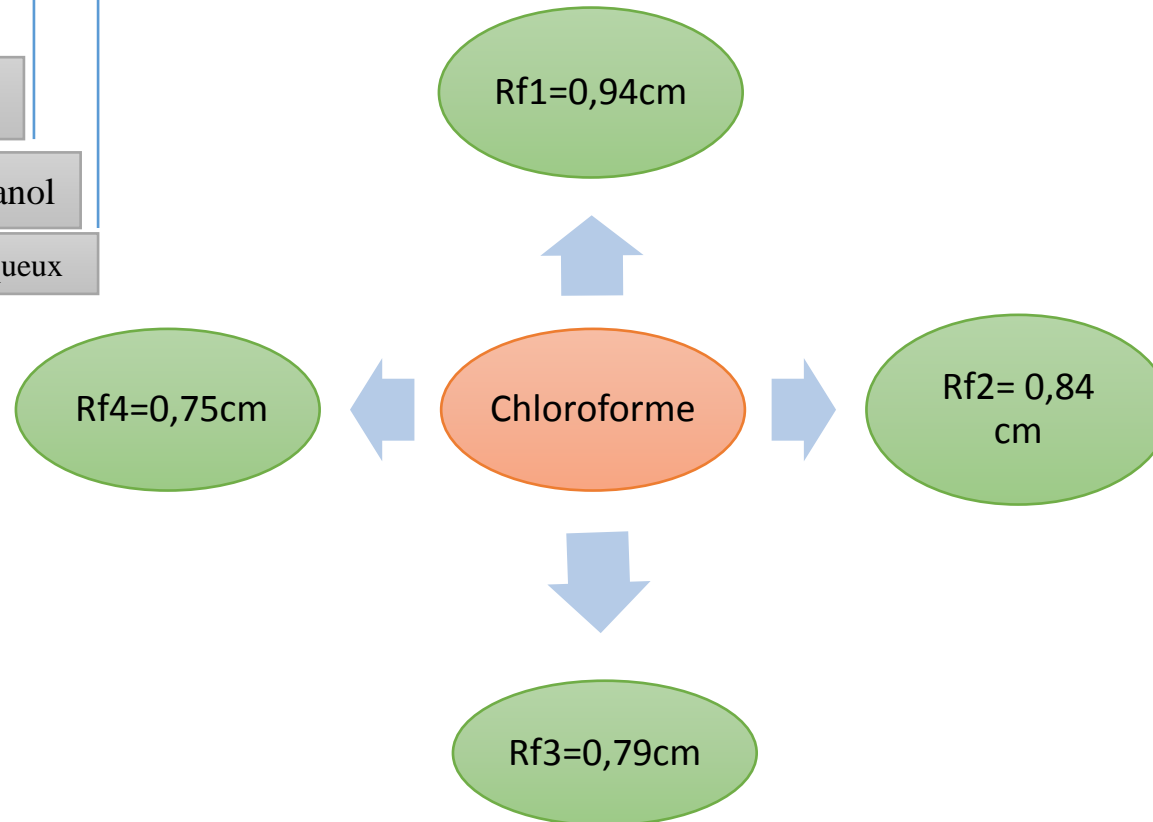
$$R_f = d_{\text{spot}} / d_{\text{solvant}}$$

Extrait
chloroforme

Extrait Acétate
d'éthyle

Extrait 1, butanol

Extrait aqueux

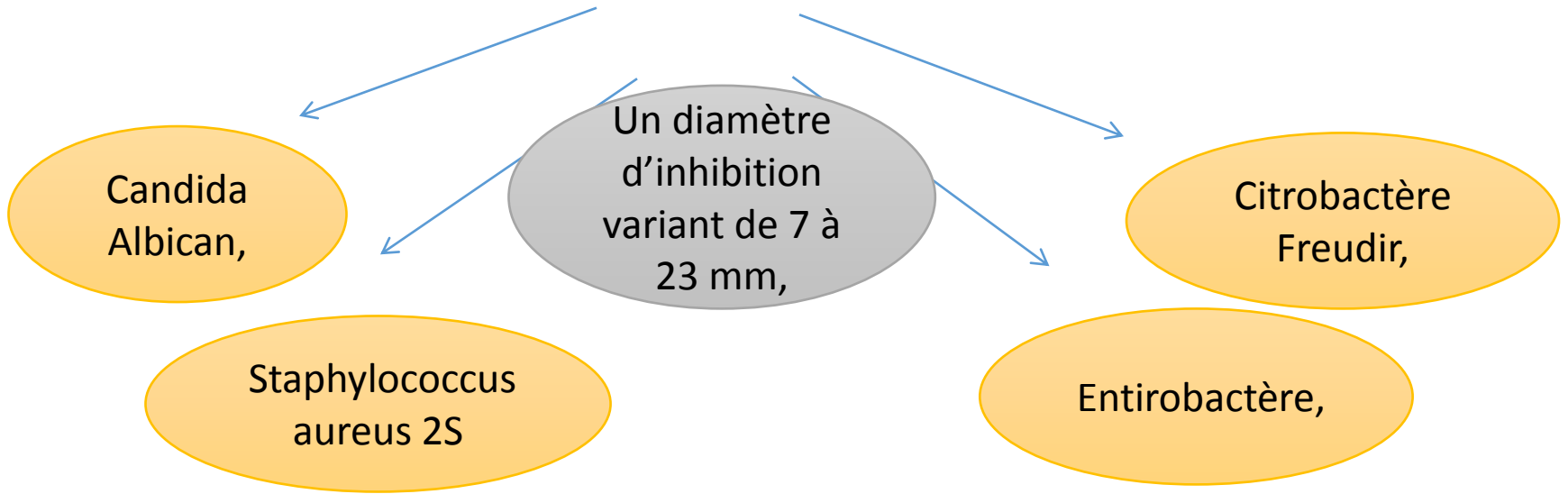


Total phenol and flavonoid compound content results

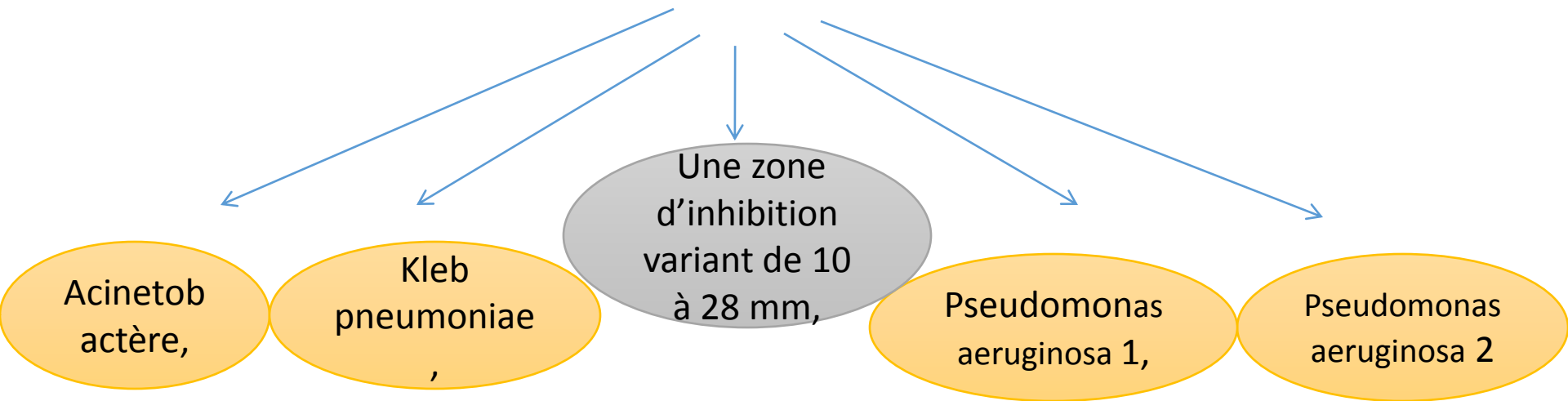
- The total phenol content showed total polyphenols content of (300 ± 0.01) $\mu\text{g EGA/mg DE}$, and total flavonoids content of (158 ± 0.1) $\mu\text{g QE/mg}$ for ethyl acetate extract.
- The total phenol content showed total polyphenols content of (28 ± 0.15) $\mu\text{g EGA/mg DE}$, and total flavonoids content of (2.5 ± 0.2) $\mu\text{g QE/mg}$ for n-butanol extract.
- Total flavonoids content of (50 ± 0.05) $\mu\text{g QE/mg}$ for chloroform extract.

Chloroforme

**Moderate
Activity**



Important activity



Remarquable

E.coli

Un diamètre d'inhibition record de 30 mm pour les trois premières dilutions.

Comparison

Strains	Zone d'inhibition (références bibliographiques)	Zone d'inhibition (nos résultats)
Candida albicans	27mm	23 mm
Staphylococcus aureus	16mm	13mm
Escherichia coli	30mm	30mm
Klebsiella pneumoniae	14mm	18mm
Pseudomonas	22 mm	24mm

**Activité
modérée**

Candida
Albican

Entiobactère

Proteus,

Diamètres d'inhibition
variant de 6 à 18 mm,

Acétate d'éthyle

**Une activité
plus importante**

Citrobacter
freundii,

Kleb
pneumoniae

Pseudomonas
aeruginosa 1,

Pseudomonas
aeruginosa 2,

Une zone d'inhibition allant
de 8 à 24 mm.

Comparison

Les souches	Zone d'inhibition (références bibliographiques)	Zone d'inhibition (nos résultats)
Candida Albican	27 mm	18mm
Proteus,	10mm	12mm
Kleb pneumoniae	14mm	24mm
Pseudomonas aeruginosa	20mm	20mm

n-butanol

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graph TD; A[n-butanol] --> B[Sensiblement les même pour toutes les souches]; A --> C[Plus importante contre Pseudomonas aeruginosa1]; B --> D[Diamètres d'inibition entre 7mm et 13mm]; C --> E[Une zone d'inhibition allant de 10 à 25 mm];
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Sensiblement les même pour toutes les souches

Diamètres d'inibition entre 7mm et 13mm

Plus importante contre Pseudomonas aeruginosa1

Une zone d'inhibition allant de 10 à 25 mm

Extrait chloroforme riche en flavonoïdes



E.Coli 30mm

Extrait acétate d'éthyle riche en polyphénols



Klebsiella pneumoniae 24mm

Extrait n-butanol riche en polyphénols



Pseudomonas aeruginosa 1 25mm

Conclusions In the present work, *Cinnamomum zeylanicum* a widely cultivated and used spice, famous in all pharmacopias for its therapeutic effect was phytochemically and biologically assessed, by subjecting its ethanol percolate to a bio-guided fractioning using different solvent polarities, identification and quantification of secondary metabolites by layer chromatography (TLC) and UV spectroscopy, undergoing *in vitro* biological trials by means of antibacterial and antifungal activities on several referential strains, which gave an important inhibiting activity against Gram (+) bacteria : *Staphylococcus aureus*, seven Gram (-) bacteria : *Escherichia coli*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, *Citrobacter freundii*, *Enterobacter aerogenes*, *Proteus Sp*, and one fungus : *Candida albicans*. Obtained results, open large perspectives on bio-guided fractioning in order to identify bioactive molecules responsible of therapeutic effect and pharmaceutical enhancement of studied spice promoting it as an efficient nutraceutical for treating microbial resistant phenomenon using some preparations as toothpastes, chewinggums, for human health and environment.

Acknowledgments

Authors would like to thank Algerian Ministry of Higher Education and Scientific Research DGEFS, and the Algerian Directorate General for Scientific Research and Technological Development DGRSDT for financial fund.



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