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PRELIMINARY STUDY ON ANTIOXIDANT PROPERTY OF TYPHONIUM FLAGELLIFORME AND ITS INTERACTION WITH DNA

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ABSTRACT:

The research was conducted in order to detect active chemicals of *Typhonium flagelliforme* with antioxidant property and at once, is also able to interact with DNA. The activity of each extract was determined by evaluation of antioxidant activity using DPPH reagent. The most active extract of *Typhonium flagelliforme* was further purified by a column chromatography. The result showed that highest antioxidant activity was given by dichloromethane extract of the root with IC₅₀= 245.989 ppm. The capability of interaction with DNA was investigated by Thermal Denaturation Assay. Changes in DNA melting temperature (T_m) indicated the interaction between DNA and the constituents of the most active fraction. There are more than one active constituent indicated by TLC analysis. TLC spots were visualized at 365 nm and sprayed by visualization reagent to detect alkaloids, terpenoids and flavonoids qualitatively. Phytochemistry analysis showed that the most active fraction of *Typhonium flagelliforme* possibly contains alkaloids, terpenoids and flavonoids.

Research Interest



- Is antioxidant property the only one plays a role in the activity?
- Is there interaction between the active compounds with any sequence of DNA?

Searching of sequence specific agent for DNA recognition

Regulating the DNA expression

Research Achievement



Fig.1: The IC₅₀ values of extracts obtained using various solvents

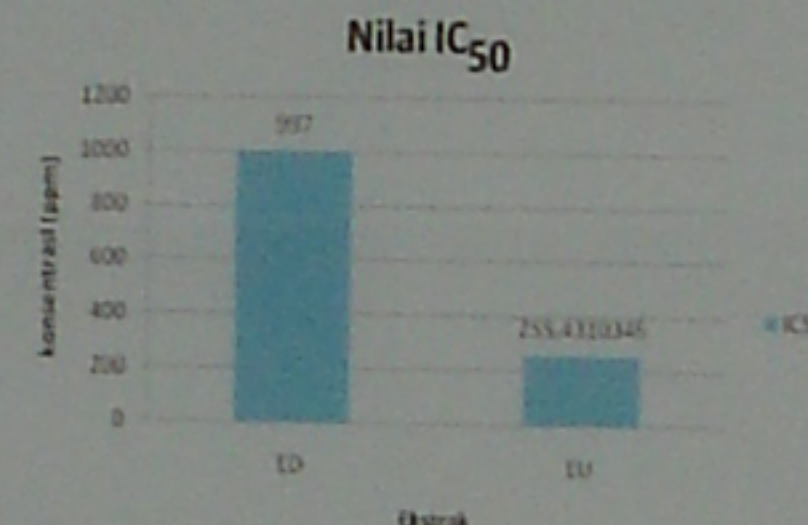


Fig.2: The IC₅₀ values of extracts obtained from leaves (ED) and roots (EU) using methylene chloride

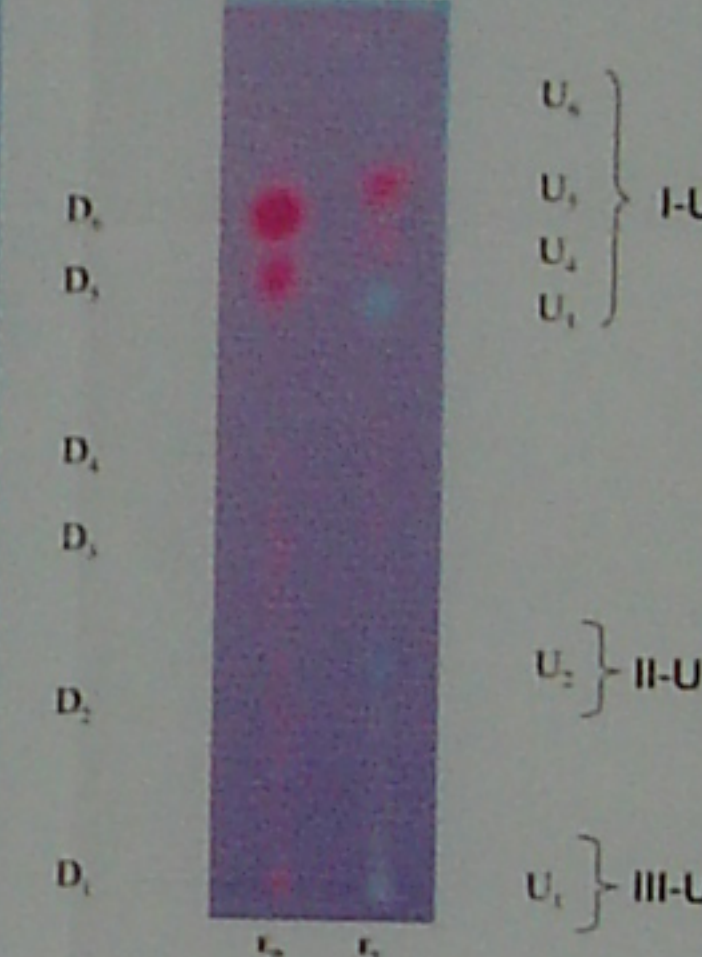


Fig.3: The TLC pattern of extracts obtained from leaves (ED) and roots (EU) using methylene chloride

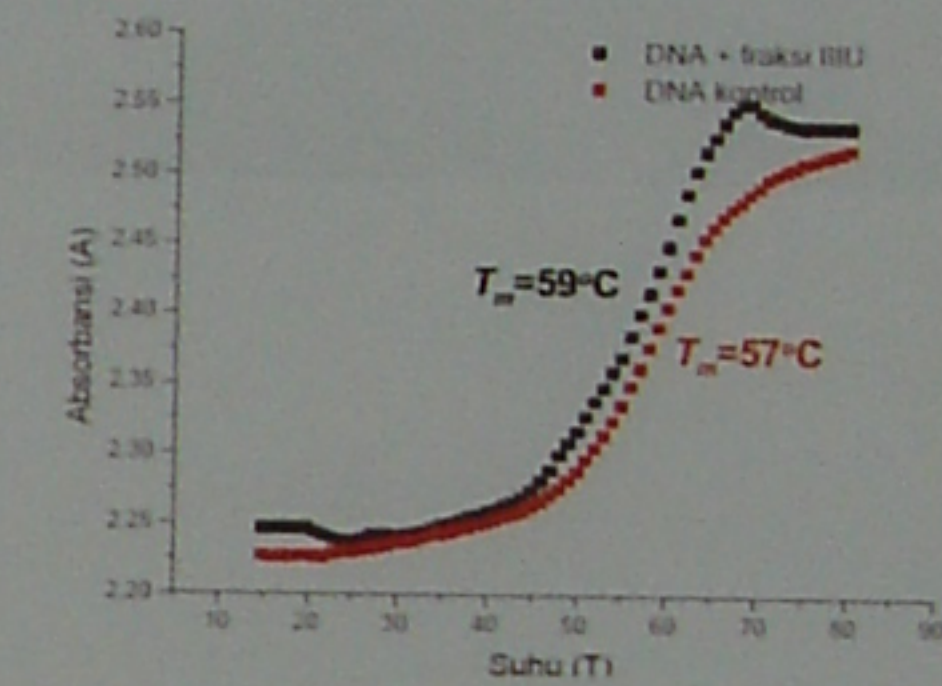


Fig.5A: Thermal Denaturation Curve of the DNA + III-U mixture (incubation period=24hours) which showed an increase of T_m from 57°C to 59°C

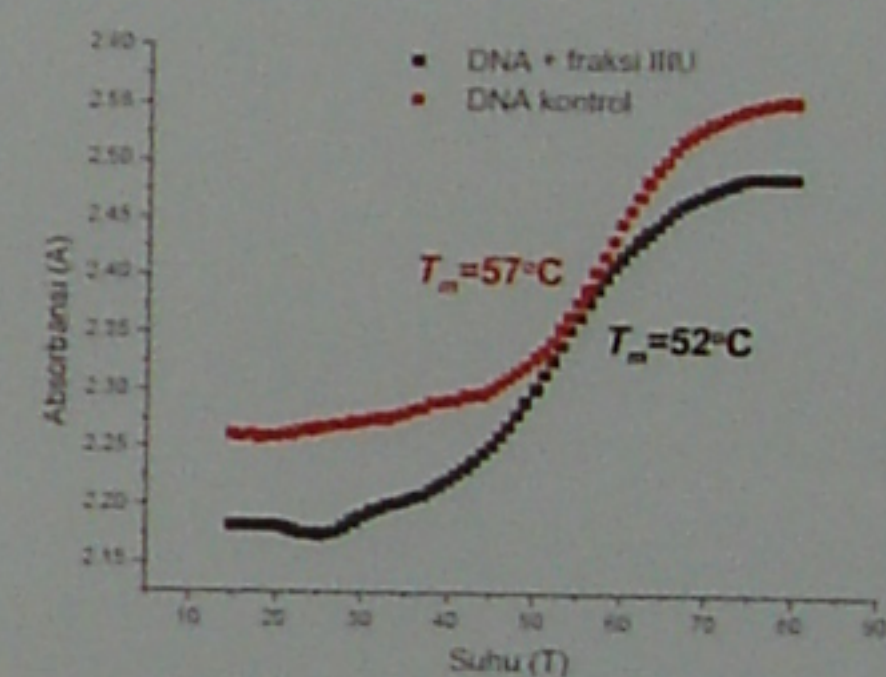


Fig.5B: Thermal Denaturation Curve of the DNA + III-U mixture (incubation period=48hours) which showed a decrease of T_m from 57°C to 52°C



Fig.4: The IC₅₀ values of partially purified extracts obtained by column chromatography (I-U was not measured due to its insolubility)

Conclusion

- The best antioxidant property was showed by methylene chloride fraction of *Typhonium flagelliforme*.
- Extract from the roots showed higher antioxidant capacity compared to the extract from leaves of *Typhonium flagelliforme*.
- Fraction of "III-U" showed ability to interact with DNA sequence used in the experiment. In the first 24h incubation period, there is a stabilizing effect of the compounds to the DNA double helix but it turned to a destabilizing effect after 48 hours (sign of a cleavage phenomenon)

Future Plan

- Thermal denaturation assay is to be continued using various sequences to check the specificity of binding/interaction. Sequence of DNA could also be chosen from the known one associated to certain diseases.
- Further research should be done to reveal the interaction mode.

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