Potential Hypoglycaemic Secondary Metabolites from *Argyreia nervosa* (Burm. f.) Bojer Influencing Human Gut Health

Anuja D. Kamble[1], Anupa A. Kumbhar[2], Rashmi P. Kulkarni[3] and Anjali A. Kulkarni[1*]

[1] Department of Botany, Savitribai Phule Pune University (Formerly University of Pune), Ganeshkhind Road, Pune-7, Maharashtra, India.

[2] Department of Chemistry, Savitribai Phule Pune University (Formerly University of Pune), Ganeshkhind Road, Pune-7, Maharashtra, India.

[3]ARNA Genext Solutions Pvt. Ltd., PO Box 37893, Doha, Qatar

[*]Corresponding author akulkarni@unipune.ac.in or anjali.uop@gmail.com

Background : Diabetes Mellitus Type 2 (DM 2) is a global concern with 6.28% of the world's population affected by it. Many hypoglycemic drugs currently available in the market are either directly or indirectly based on a number of plant secondary metabolites. The intent of present study was to find out the multi-functional role of secondary metabolites from leaf methanolic extract of *Argyreia nervosa* (Burm. f.) Bojer. as α-amylase inhibitors as well as human gut health enhancers.

Methodology

Plant material collection & Extraction

Qualitative Analysis (Phytochemistry & Starch-Iodide Assay)

Quantitative Analysis (DNSA Assay)

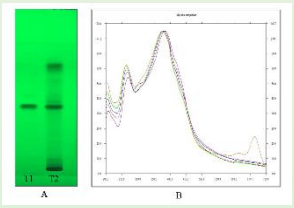
Detection & Identification of 2^0 metabolites (HPTLC, HPLC & ESI-MS)

In-silico molecular docking studies

Results

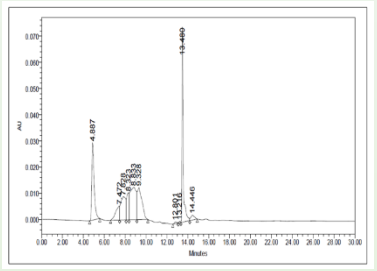
Extract/Standard/Positive control	PPA Inhibition IC_{50}
Acarbose	5.78 µg/mL
Quercetin Standard	16.5 µg/mL
Ursolic acid Standard	13.2 µg/mL
Leaf methanol extract	1.1 mg/mL

Table 1. PPA inhibitory activity of *A. nervosa* leaf methanol extract and Quercetin and Ursolic acid standard compounds.

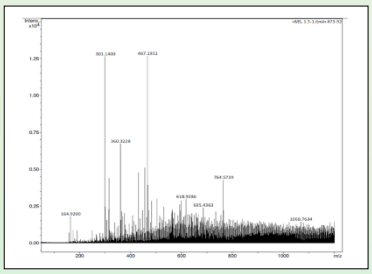


(1) (2)

(1) Quercetin (Rf=0.48) & (2) Ursolic acid (Rf=0.57) separated and detected on the TLC plate.



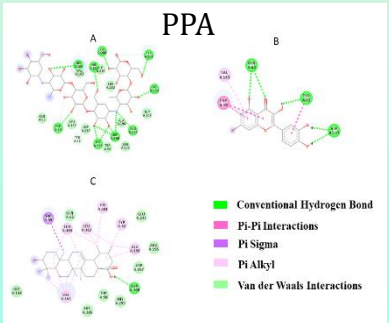
HPLC spectrum of *A. nervosa* leaf methanol extract



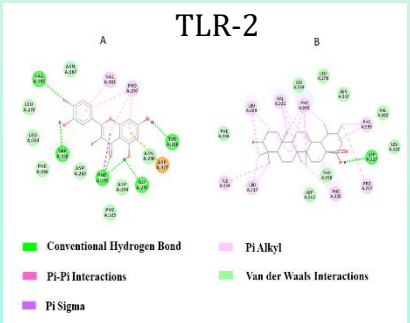
ESI-Mass spectrum of the methanolic extract fraction eluted at 14 min by HPLC

Conclusion

The leaf methanolic extract contained Quercetin and Ursolic acid. They exhibited great α-amylase inhibitory activity in both *in-vitro* and *in-silico* experiments. For the first time, we have shown excellent *in silico* docking of both of these molecules on active site of TLR-2. Our current work proposed the multi-functional role of Quercetin and Ursolic acid as α-amylase inhibitors as well as human gut health enhancers.



2D representation of PPA Protein-Ligand interactions (A) Acarbose (B) Quercetin (C) Ursolic acid



2D representation of TLR2 Protein-Ligand interactions (A) Quercetin (B) Ursolic acid

References

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