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Data Article

Dataset on the kinetics of the inhibition of PTP1B by the flavonoids and pheophytin A from *Allophylus cominia*

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ARTICLE INFO

Article history:

Received 24 March 2017

Received in revised form

18 January 2018

Accepted 19 January 2018

Keywords:

Flavonoids

Pheophytin

Inhibition

Kinetics

PTP1B enzyme

ABSTRACT

The data presented in this article are related to the research article under the title “in vitro anti-diabetic activity of flavonoids and pheophytins from *Allophylus cominia* Sw. on PTP1B, DPPIV, alpha-glucosidase and alpha-amylase enzymes” (Semaan et al., 2017) [3]. This article defines the kinetics of inhibition of flavonoids and pheophytin A extracts from *A. cominia* which showed an inhibition of the PTP1B enzyme activity. The main reason to make these results public is to confirm that this study was followed up and no more experiments are needed, also to confirm that these compounds can be reported as PTP1B inhibitors.

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DOI of original article: <https://doi.org/10.1016/j.jep.2017.03.023>

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<https://doi.org/10.1016/j.dib.2018.01.057>

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Specifications Table

Subject area	Enzymology
More specific subject area	Enzyme kinetic studies
Type of data	Figures and tables
How data was acquired	<i>in vitro</i> assays
Data format	Analyzed
Experimental factors	All enzymes, substrates and inhibitors were prepared freshly before each experiment
Experimental features	Each experiment were repeated three times
Data source location	United kingdom, Glasgow, University of Strathclyde
Data accessibility	The data are accessible only within this article

Value of the data

- The data presented in this article is original and have not been published before.
- The data presents the importance of the samples extracted from the Cuban plant on the inhibition of PTP1B.
- The data can be used by other researches to follow on with more studies regarding the mechanism of action of these samples.

1. Data

Various concentrations of the flavonoids and pheophytin A samples were incubated with PTP1B enzyme and increasing concentrations of the substrate. The results were graphed using a Michaelis-Menten plot. V_{\max} and K_m were calculated (Figs. 1 and 2). As the flavonoids and pheophytin A concentration increased, so did the K_m . The V_{\max} was unchanged with increased concentrations of inhibitors.

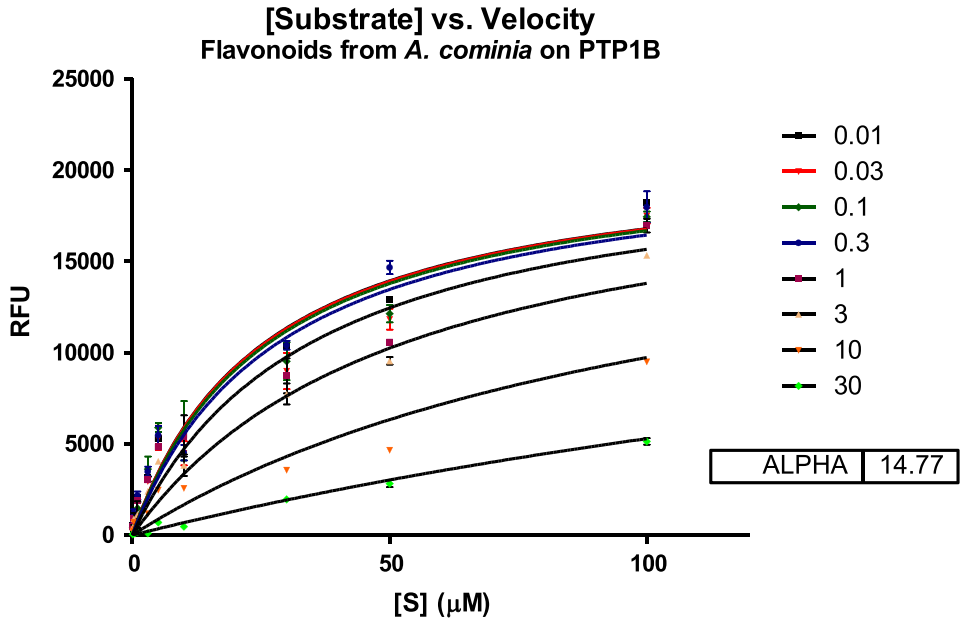
The shape of the curves in the Michaelis-Menten plot was hyperbolic. Alpha was > 1 for both samples. All these factors were indicative of a competitive inhibition of the flavonoid and pheophytin A samples.

The mechanism of action of the TFMS inhibitor used in the assay also confirmed its competitive inhibition. As the TFMS concentration increased, so did the K_m . The V_{\max} was unchanged with increased concentrations of inhibitor.

The shape of the curve in the Michaelis-Menten plot was hyperbolic. Alpha was around $1.941e+015 > 1$ (very large) (Fig. 3). The mechanisms of action of flavonoid and pheophytin A samples extracted from *Allophylus cominia* were comparable to that of the TFMS inhibitor of PTP1B enzyme activity [1,2,4].

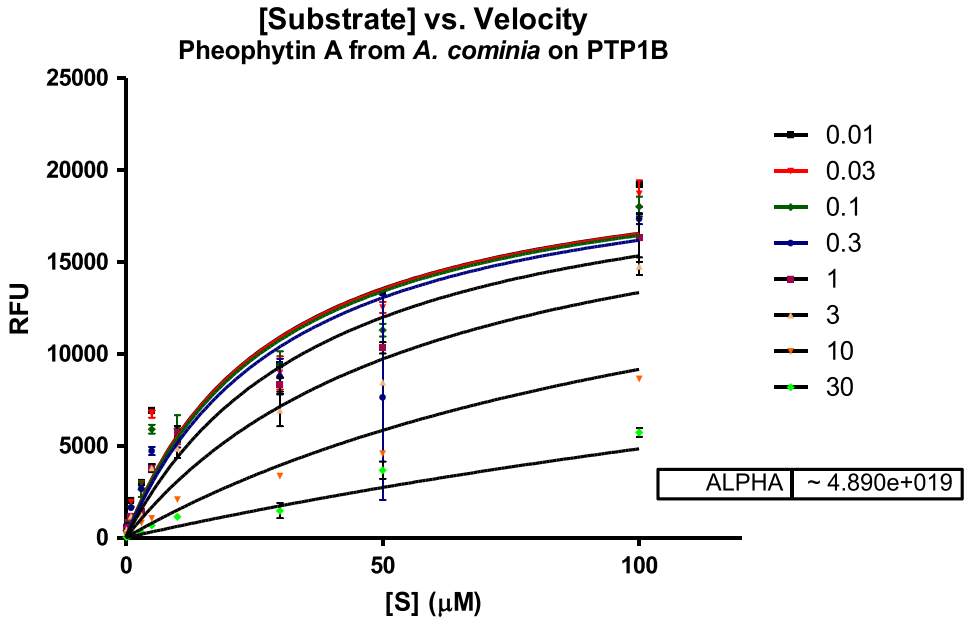
2. Experimental design, materials and methods

Various concentrations of *A. cominia* extract (both flavonoids and pheophytins, concentration range 0.01–30 $\mu\text{g/ml}$) were incubated with PTP1B enzyme (2 nM) at 37 °C for 30 min [3]. Various concentrations of PTP1B substrate (DiFMUP, concentration range 0–40 μM) was added and incubated at 37 °C in an atmosphere containing 5% CO_2 for another 10 min. The mechanism of inhibition of PTP1B by *A. cominia* extract was compared with the commercial inhibitor P32/98. The same procedure was repeated with various concentrations of the PTP1B inhibitor (TFMS, concentration range 0.0003–3 μM). The umbelliferone was tested using a Wallac Victor² using ex 355 nm/em 460 nm.



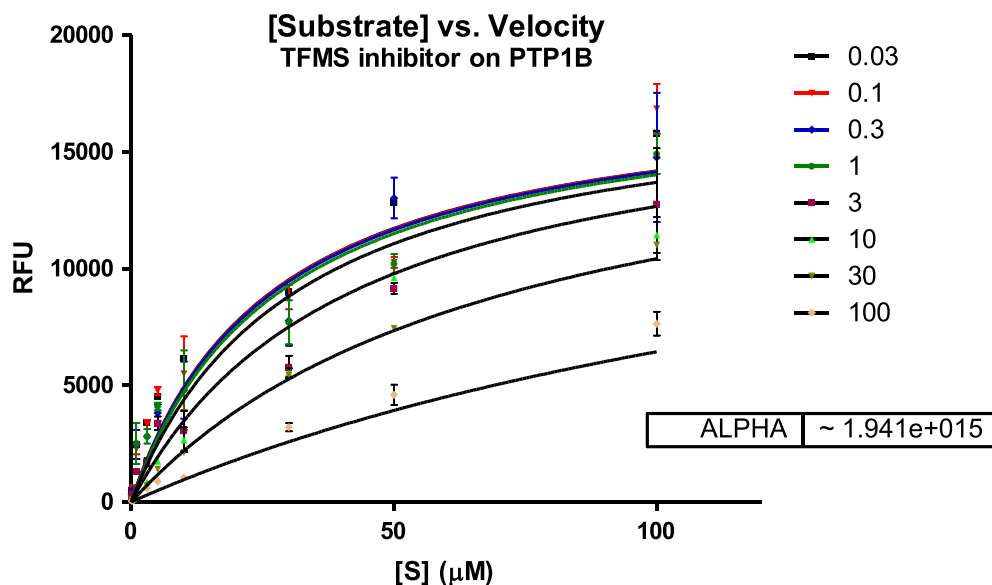
Inhibitor Concentration (μM)	V_{max} (RFU)	K_m (μM)
0.01	21482	26.36
0.03	22312	35.98
0.1	19187	21.48
0.3	22474	27.96
1	19725	29.05
3	21214	47.04
10	20901	131.3
30	20313	296.8

Fig. 1. Michaelis-Menten plot of the inhibitory effect of the flavonoid fractions of *A. cominia* on PTP1B-catalysis hydrolysis of the enzyme. Data are expressed as mean RFU (relative fluorescence unit) for $n = 3$ replicates of each substrate concentration (0.01–100 μM). The table below the graph represents K_m (μM) and V_{max} (RFU) with each inhibitor concentration.



Inhibitor Concentration (μM)	Vmax (RFU)	Km (μM)
0.01	22729	28.68
0.03	22151	29.93
0.1	20295	26.08
0.3	21838	44.14
1	20940	38.14
3	20189	48.4
10	22671	169.2
30	21659	276

Fig. 2. Michaelis-Menten plot of the inhibitory effect of the pheophytin A fraction of *A. cominia* on PTP1B-catalysis hydrolysis of the enzyme. Data are expressed as mean RFU (relative fluorescence unit) for $n = 3$ replicates of each substrate concentration (0.01–100 μM). The table below the graph represents K_m (μM) and V_{max} (RFU) with each inhibitor concentration.



Inhibitor Concentration (μM)	Vmax (RFU)	Km (μM)
0.01	17619	18.59
0.03	18869	26.22
0.1	18520	26.99
0.3	17491	27.77
1	18974	52.8
3	18413	56.94
10	19633	79.19
30	19323	154.4

Fig. 3. Michaelis-Menten plot of the inhibitory effect of the TFMS on PTP1B-catalysis hydrolysis of the enzyme. Data are expressed as mean RFU (relative fluorescence unit) for $n = 3$ replicates of each substrate concentration (0.01–100 μM). The table below the graph represents K_m and V_{max} with each inhibitor concentration.

Acknowledgements

Many thanks to Dr Eva Marrero for introducing and sending the plant material from Cuba.

Funding sources

This work is a part of a Ph.D. thesis about finding potential anti-diabetic medicinal plant *Allophylus cominia*. The project was self-funded.

Transparency document. Supplementary material

Transparency document associated with this article can be found in the online version at <http://dx.doi.org/10.1016/j.dib.2018.01.057>.

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