Article

Development of Phosphodiesterase-Protein Kinase complexes as novel targets for discovery of inhibitors with enhanced specificity

Nikhil K. Tulsian1,2, Valerie Jia-En Sin3, Hwee-Ling Koh3\*, Ganesh S. Anand1,4\*

1 Department of Biological Sciences, 14 Science Drive 4, National University of Singapore, Singapore – 117543

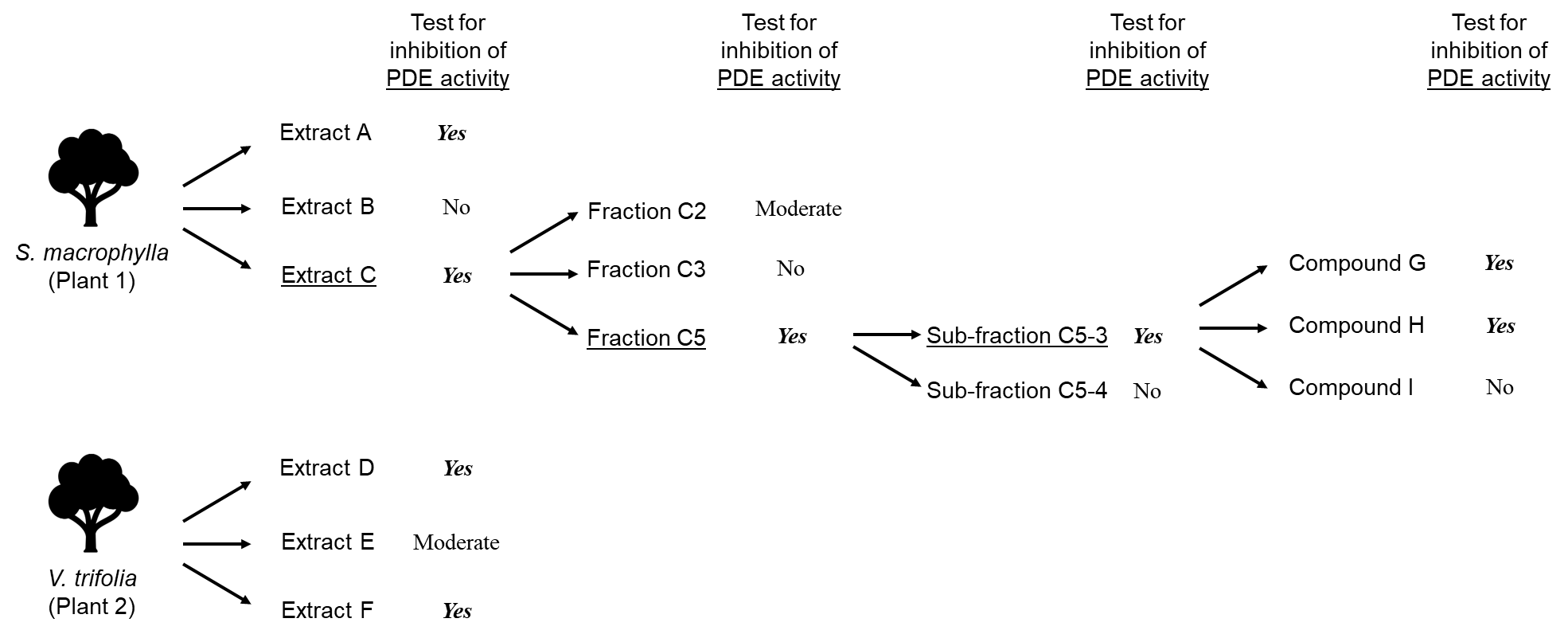
2 Department of Biochemistry, 28 Medical Drive, National University of Singapore, Singapore – 117546

3 Department of Pharmacy, 18 Science Drive 4, National University of Singapore, Singapore – 117543

4 Department of Chemistry, The Pennsylvania State University, Philadelphia, United States of America - 16801

\* Correspondence: KHL: phakohhl@nus.edu.sg; Tel.: +6565167962; GSA: gsa5089@psu.edu; Tel.: 814-867-1944

**SUPPLEMENTARY INFORMATION**



**Supplementary Figure S1: Activity-guided fractionation of plant extracts.**

Schematic of extraction of compounds/fractions from two species of medicinal plants - *Swietenia macrophylla* and *Vitex trifolia*. From each plant, three crude extracts were isolated and their PDE inhibition was tested by PDE-GloTM and FP assays. Each of the active/inhibitory fractions were then subjected to another round of fractionation and activity measurement. Qualitative results of activity assay are shown and the extracts/fractions selected for sub-fractionation are underlined.

**Supplementary Table S1:** Inhibition values for various extracts and fractions inhibiting PDE8 and PDE5, as determined by fluorescence polarization (FP) and PDE-GloTM assays. Average values (n = 6) were calculated as described in methods and their standard deviations (SD) are indicated.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **(i) PDE8** | | | | | |
| **S.No.** | **Sample** | **%FP inhibition** | **SD** | **%PDE-Glo inhibition** | **SD** |
| 1 | No PDE8 | 100 | 0.15 | 99.95 | 0 |
| 2 | PF-04 | 95.6 | 2.10 | 99.6 | 0.65 |
| 3 | IBMX | 0.24 | 1.96 | 92.3 | 6.4 |
| 4 | A | 6.56 | 0.55 | 24.7 | 6.1 |
| 5 | B | 32.58 | 2.90 | 6.4 | 9.6 |
| 6 | D | 40.2 | 1.05 | 99.7 | 2.3 |
| 7 | E | 88.56 | 2.78 | 99.71 | 2.60 |
|  |  |  |  |  |  |
| **(ii) PDE5** | | | | | |
| **S.No.** | **Sample** | **%FP inhibition** | **SD** | **%PDE-Glo inhibition** | **SD** |
| 1 | No PDE5 | 100.00 | 0.10 | 100.00 | 0.00 |
| 2 | Sildenafil | 96.50 | 1.20 | 95.90 | 2.30 |
| 3 | A | 99.83 | 2.50 | 92.20 | 6.40 |
| 4 | B | 4.96 | 0.35 | 7.40 | 6.10 |
| 5 | C | 99.10 | 3.10 | 96.80 | 1.95 |
| 6 | D | 75.50 | 2.20 | 65.10 | 9.60 |
| 7 | E | 85.37 | 1.62 | 85.30 | 2.30 |
| 8 | F | 99.83 | 3.58 | 97.90 | 0.65 |
| 9 | G | 90.90 | 2.60 | 89.12 | 5.76 |
| 10 | H | 82.60 | 1.30 | 98.53 | 1.26 |
| 11 | I | 1.00 | 0.07 | 4.27 | 8.15 |
| 12 | C2 | 24.80 | 1.37 | 44.67 | 8.54 |
| 13 | C3 | 7.40 | 0.13 | -12.70 | 3.70 |
| 14 | C5 | 95.80 | 2.80 | 95.65 | 1.30 |
| 15 | C5-3 | 99.10 | 3.20 | 94.40 | 1.74 |