

# Traditional Chinese Medicine (TCM): Bio activity guided anti-inflammatory drug-like compounds isolation from Rheumatoid Arthritis (RA) treatment formulation

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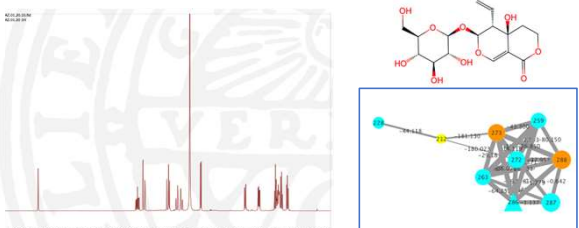
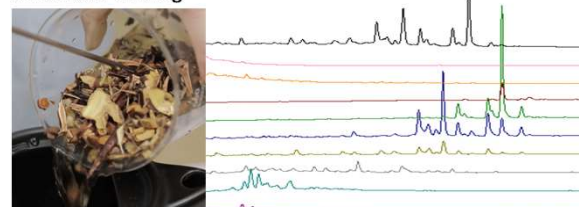


## Introduction

Although TCM was developed thousands of years ago, it is still today used in clinical settings in Chinese hospitals. There are also many things we do not know about TCM.

- In the clinic, several TCM formulations (which contain a mixture of five to eight plants) have been validated for RA treatment.
- Joint inflammation is one of the major symptoms of RA. Inhibition of formation of prostaglandin E2 (PGE2) by inhibition NF-κB is one strategy to alleviate inflammation
- Extracts and fractions are analysed through HPLC, LC-MS and NMR for chemical profiling purposes. MS/MS data was also used for cheminformatic research for dereplication and molecular networking.
- NF-κB inhibition activity and cell viability of the extracts and fractions were tested against Jurkat cells.

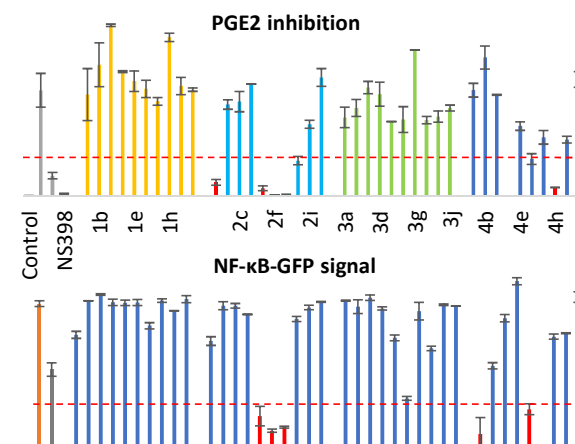
## Chemical Profiling



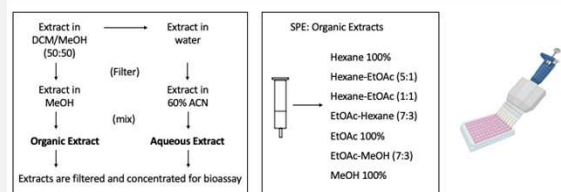
Mingxun Wang, et al. "Sharing and community curation of mass spectrometry data with Global Natural Products Social Molecular Networking." *Nature biotechnology* 34, no. 8 (2016): 828. PMID: 27504778

## Bioactivity

Some fractions were found with NF-κB inhibition activity that significantly decrease PGE2 level in tested cells. These active fractions labeled in red are further fractionated through RP-HPLC.



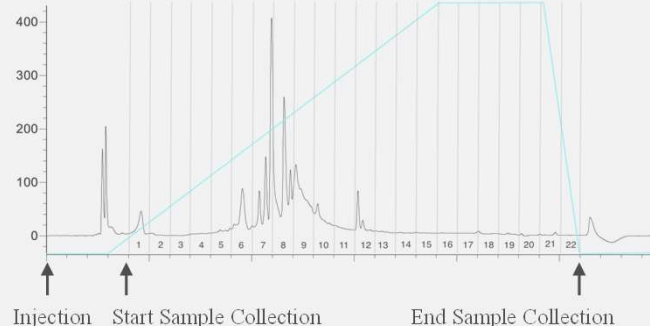
## Method



Grkovic, Tanja, et al. 2020. *ACS Chemical Biology* 15, 1104-1114.

- Extracts and fractions are analysed through HPLC, LC-MS and NMR to understand the content. MS/MS data was used for cheminformatic research to group both known and unknown compounds through GNPS.
- NF-κB inhibition activity and cell viability were tested against Jurkat cells.

## Active fraction RP-HPLC further fractionation



## Conclusion

- TCM formulation against RA in clinic are chemically very diverse.
- Compounds isolated from selected TCM can significantly decrease PGE2 and NF-κB signal, highlighting their anti-inflammatory potential.
- Further assays are ongoing...