Happy New Year!

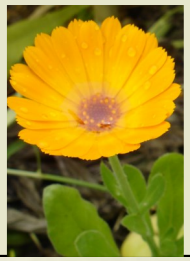
December 17th, 2015

Herbal Analysis Reporter

HERBAL ANALYSIS SERVICES

SPECIAL THANK YOU:

- EPSRC UK NATIONAL MASS SPECTROMETRY FACILITY
- OUR COLLABORATORS
- OUR WORLDWIDE FOLLOWERS



INSIDE THIS ISSUE:

Our 2015 Publications	2
The African Moringa	2
Our Novel Bioactive Compound of the Year	2
Natural Products in Health & Disease	3
Beyond Natural Products—Synthesis	3
Our Products & Services	3
Acknowledgements	4

SPECIAL THANK YOU

We were inspired; We did it; and became Successful — Thank you! (...page 4)



30 YEARS OF RESEARCH
DR SOLOMON HABTEMARIAM

It was in November 1985 that I completed my first degree and moved into natural products research. It sounds like a very long journey but this period included the time I spent to study for my second, third and fourth degrees. It also included two years of postdoctoral research and 23 years of academic research in the UK. Throughout this period, I looked into the pharmacology and chemistry of hundreds of medicinal plants collected from all corners of the world. In short, natural products, primarily those derived from plants, have been the subjects of my work and dream during the last three decades. You may wonder how I would celebrate my 30th research anniversary. How about a volume of research far more than before? ...Page 2.

Our Publications of the Year

We wanted to make the year special by making a far larger volume of research contributions. For this, we used our greatest asset of all: the numerous collaborators far away from home who are always willing to inspire and be inspired by natural products research. Here are the list of journals that our peer reviewed publication of the year 2015 appeared:

- *Nature Methods*
- (2x) *Natural Product Communications*
- *Anti-Cancer Agents in Medicinal Chemistry*
- *Journal of Ginseng Research*
- *(2x) Phytotherapy Research*
- *International Journal of Cardiology*
- *Current Medicinal Chemistry*
- *Natural Product Research*
- *Antiviral Research*
- *Fitoterapia*
- *Mini Review in Medicinal Chemistry*
- *Critical Reviews in Biotechnology*
- *RSC Advances*
- *Journal of Enzyme Inhibition and Medicinal Chemistry*
- *Advances in Nutrition*
- *Nutrients*
- *Life Sciences*
- *Neurochemistry International*
- *Cancer & Metastasis Reviews*
- *Pharmacological Research*
- *Clinical Immunology Endocrine & Metabolic Drugs*
- ***Beverages***
- ***....etc.***

The Story of the African Moringa

"It took more than three decades to sell this good

It is a remarkable story! Some 30 years ago, we witnessed this plant being used locally in Southern Ethiopia as food and medicine. Now, it is selling widely in countries far beyond Africa.

We looked into the active ingredients responsible for its antidiabetic and potential antioxidant effects. We have successfully characterised the isolated active principles with multifunctional pharmacological effects. We also investigated the extractability of the active ingredients in herbal preparations (Link **1, 2**).

With the potential to change the lives of millions in areas vulnerable to droughts, many aid agencies are now focusing their attention on Moringa farming. Our research on it is continuing too and more of our publications will appear very soon.....

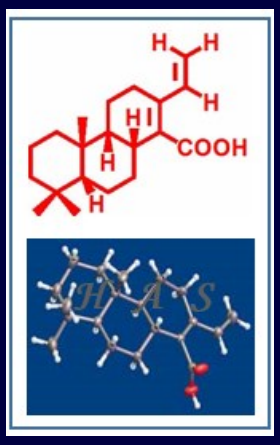


Our Novel Bioactive Compound of the Year



Erythrophleum ivorense: This massive Ghanaian timber tree is employed in traditional medicine as an antiinflammatory and wound healing agent among others. For this purpose, the barks are widely traded across many countries in West Africa.

Our study on the pharmacology and chemistry of the root barks this year has resulted in the identification of a novel diterpene as the active principle. The study employed a unique model of inflammation in chicks and structural assignments by X-Ray crystallography (**Link**).



NATURAL PRODUCTS IN HEALTH AND DISEASE

Chronic inflammatory diseases, cancer, diabetes, neurodegenerative diseases....The list is very long but they are all just common examples of complex diseases.

Could one small molecular weight compound that acts through one specific target do the job of treating a complex disease? Well, we are yet to see the proof of success for such an approach. How about neutralising multiple targets by using a drug cocktail instead of one compound? Or, how about using one multifunctional drug that neutralise multiple targets of a complex disease?

Throughout the year, we have looked into numerous promising natural products. We critically reviewed existing literature and provided insight into the potential of various natural compounds including those old drugs that we take for granted. These include, Rutin for diabetes, *Ginkgo biloba* compounds for stroke, omega-3 fatty acids and numerous flavonoids for cancer; those that target the mitochondrial system, etc.

We have had numerous other research areas too where we targeted the herpes virus by structurally unique natural compounds from Tansy and South American plants; on the identification of a novel triterpene from an African medicinal plant; protein tyrosine phosphatase 1B inhibitors from Pakistani medicinal plants, etc..(See our Publications Page)

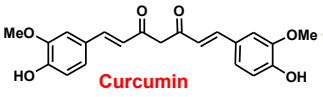
OUR WORK WILL CONTINUE TO UNRAVEL NATURE'S SECRET ....

BEYOND NATURAL PRODUCTS

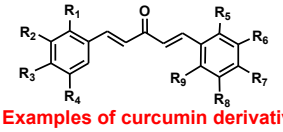
We have isolated a range of gallic acid derivatives from medicinal plants grown in our experimental garden. Our isolation in gram quantities of these compounds (**e.g. BERGENIN**) allows us to derivatise them into more bioactive semi-synthetic compounds.



We have also launched a total synthesis approach for identifying natural product mimics with potent pharmacological activities. Our large volume of anticancer curcumin derivatives are perfect examples. Through this approach, we have a lot more to add into our bioactive compounds library.



Curcumin



Examples of curcumin derivatives

"We have been inspired by natural medicines...Now we are making their mimics to get a better potency"

OUR NATURAL PRODUCTS & SERVICES

Our natural, semisynthetic and synthetic compounds list has continued to grow year after year. We have been particularly keen in expanding our potential on those products that we can produce in gram quantities. We are always happy to share these resources for research uses.

We have been assisting the public, herbal professionals, small companies and scientists on all aspects of plant medicines. These include quality control assays, drug discovery projects and isolation of bioactive compounds. We welcome all enquires in this area.

We have been hosting researchers for short term training on chromatographic isolation of bioactive compounds; spectroscopic analysis of isolated compounds and pharmacological assays of crude and purified samples. Although we are still taking trainees on split-PhD studentship for up to a maximum period of one year, we will not be offering a PhD study programme in our Lab in 2016.

WE OFFER:

- *Compounds*
- *Services*
  - *Chromatography*
  - *Spectroscopy*
  - *Bioassays*
- *Consultancy*
- *Research Training*



Dr Solomon Habtemariam

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Elected Fellow:

the Royal Society of Medicine (2007);

the Royal Society of Chemistry (2009);

the African Scientific Institute (2014);

the African Academy of Sciences (2015).

Herbal Analysis Services has been founded & exclusively owned by Dr. Solomon Habtemariam. Its mission is three-fold: to discover novel drugs from natural sources; employ phytochemical and pharmacological assays to standardise plant medicines; and provide expert advice and services on the subject area. The website also provides resources and news on our progress both on modernisation of herbal medicines and the discovery of novel pharmacologically active compounds. Dr. Habtemariam has published over 120 papers in peer review journals and regularly hosts experts from all over the world who come for research visits and trainings.

We welcome all requests on natural medicine researches and businesses.

OUR SPECIAL THANK YOU GOES TO ALL WHO COLLABORATED WITH US, INSPIRED US WITH THEIR GOOD WORK AND OUR FOLLOWERS

EPSRC UK NATIONAL MASS SPECTROMETRY FACILITY : Thanks to this institution, we have been getting reliable mass spectroscopy data for our compounds on a regular basis.

OUR COLLABORATORS: Far too many to list but it wouldn't be appropriate without listing my hero of the year:

Prof. Giovanni Lentini—My Italian friend (University of Bari) who generously lends his analytical thinking at all times. Our publication in Nature Methods among others this year was exemplary.

My Indian Collaborators led by Dr George Varghese; Ghanaian colleagues led by Prof. Abraham Mensah; the numerous groups from Cameroon, Iran, Pakistan, Italy, Spain, etc.....THANK YOU.

The African Academy of Sciences

It is good to be inspired! I personally thank the AAS for awarding me a fellowship title this year.

OUR FOLLOWERS: **Our website visitors** figure for the last 12 months was **428,488** as compared with the previous year of 368,233. As usual, the vast majority of our visitors are far away from home and we thank all those who visited us, and even more, those who encouraged us by sending positive feedback. We always welcome queries on natural products research and education: whether it is coming from professionals or the general public...We are always here to help, support and advance scientific knowledge in our field.

JOURNALS: Journals that Dr Habtemariam serve as a member of the editorial board have kept increasing in number. In 2015, Beverages, Evidence-Based Complementary and Alternative Medicine (eCAM) and Current Pharmaceutical Biotechnology have been added. Working with a great team always make a difference!

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