Breakthrough in Treating Nasal Cancer Found in Borneo Plant

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Initial research shows that the Aglaia plant that grows in Borneo may hold the key to treating cancer, specifically nasal cancer which has an unusually high rate of incidence in Sarawak.

Natural product:

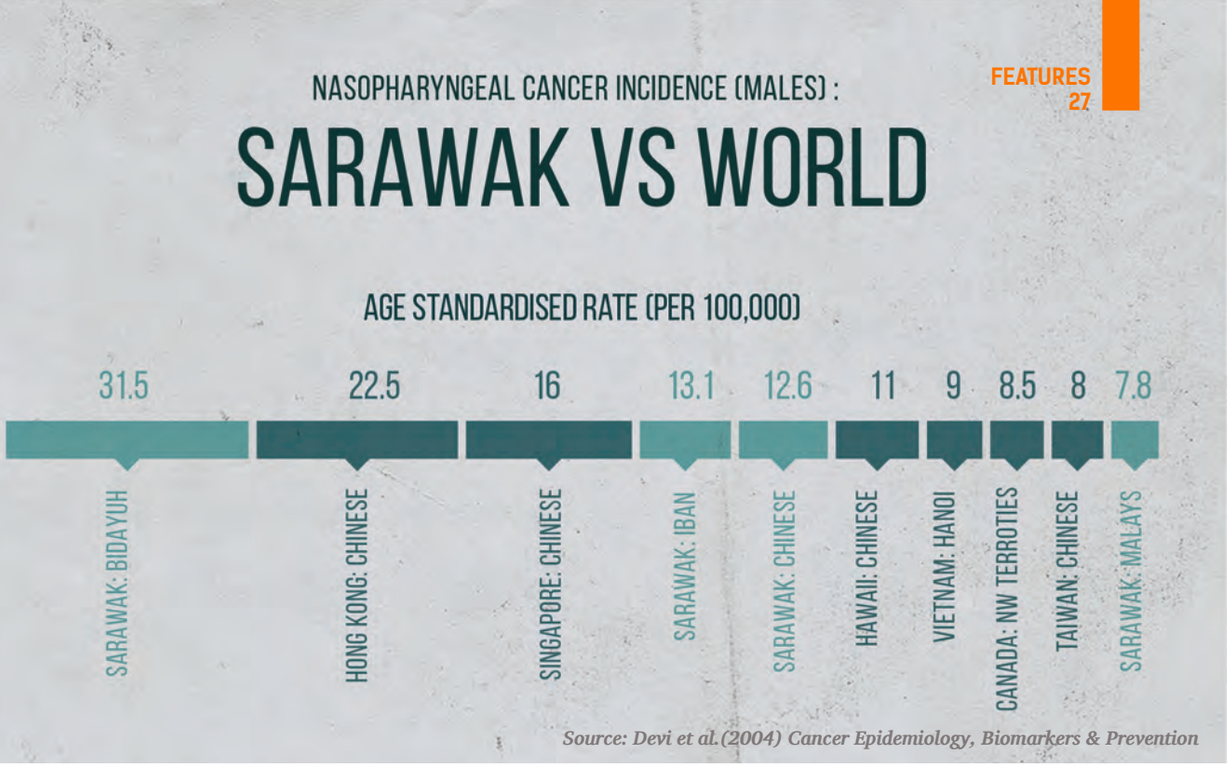
A new anti-cancerous agent called Silvestrol has been discovered in the local *Aglaia* plant in Borneo. The *Aglaia* species of plant known as *Kelabuno* to the Orang Ulu and *Segera* to the Iban, has traditionally been used to treat a variety of ailments such as skin diseases and allergies. Silvestrol, a natural product derived from the Aglaia has developed as a local success story as it prevents the rogue cancer cells from making proteins they need to survive.

Current research at Swinburne:

Swinburne Sarawak has recently partnered with the Sarawak Biodiversity Centre to launch a cancer research program on Silvestrol. This study will investigate if Silvestrol is effective at killing the cancer that is endemic amongst the rural communities of Sarawak – nasopharyngeal or nasal cancer. This tumour occurs deep with the nasal cavity at the base of the brain in a location called the nasopharynx. According to research carried out by the Sarawak General Hospital, it is the most common type of cancer

The Aglaia plant

Dr. Paul Matthew Neilsen at the Sarawak Biodiversity Centre



Source: Devi et al.(2004) Cancer Epidemiology, Biomarkers & Prevention

WHAT IS SILVESTROL

- Silvestrol is found in the twigs, leaves and bark of the *Aglaia* species of plant which is commonly found in Borneo. It is derived from a class of compounds called **rocaglates** which are renowned for their ability to inhibit cancer and inflammatory diseases.
- Silvestrol kills cancer cells by preventing **protein translation** – a process whereby it prevents cancer cells from making the key proteins that they need for their growth and survival.
- This research is looking into using Silvestrol in a **combination therapy** – an approach which uses a variety of treatments to kill cancer cells more effectively.

NASOPHARYNGEAL CANCER – SARAWAK'S SILENT KILLER

- The Bidayuh community of Sarawak has the highest risk of developing this type of cancer than any other ethnic group worldwide.
- The hidden location of this cancer, in a tissue deep within the nasal cavity at the base of the brain, makes it difficult to detect early, and majority of the patients are only diagnosed when the cancer has advanced and spread to other parts of the body (a process called metastasis).
- Surgery is not an option for this cancer type due to the deep-seated location of the tumour. Hence, patients typically only have chemotherapy and radiotherapy as treatment options which also compromise the body's immune system.

diagnosed in Sarawakian males and the risk of developing this cancer is remarkably high in several ethnic groups indigenous to Sarawak. In particular, the Bidayuh have the highest risk of developing this cancer type world-wide. To put this high risk in local context, the Bidayuh are over 30 times more likely to develop this cancer type than any other ethnic group in Malaysia.

Initial results look promising as Silvestrol kills cancer cells by preventing protein translation: a process whereby it prevents cancer cells from making the key proteins that they need for their growth and survival. Silvestrol blocks the ribosomes, which are parts of the cell that make the proteins the cancer cells need, thus cutting off their food chain. This suggests that Silvestrol may be a good candidate for future treatment of nasal cancer.

> *Ultimately we hope that the outcomes from this research collaboration along with further funding will lead to a phase I clinical trial on Silvestrol here in Sarawak.*

Working in collaboration:

To accelerate the pre-clinical research on Silvestrol, Swinburne Sarawak is also working together with the Institute of Medical Research in Kuala Lumpur. This collaboration will look into the ability of Silvestrol to work together with other cancer therapies called targeted therapies: which targets the cancer cells or the cells near them that were helping them grow and thrive. We still need to evaluate Silvestrol's toxicity in humans but we are hoping that this could be the breakthrough in treating nasal cancer. If successful it would be a better choice than common chemotherapies as it doesn't compromise the body's immune system.