Potential Use of *Tabernaemontana divaricata* Plant Parts Against Neuraminidase Activity

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On 11th June 2009, the World Health Organization (WHO) has raised the level of influenza pandemic alert to phase 6 which indicated that a global pandemic was underway. By then, more than 70 countries have reported confirmed cases of Influenza A (H1N1). More than 18 849 deaths from at least 214 countries with confirmed cases of influenza H1N1 were reported until end of July 2010.

Few anti-influenza drugs are already available in the market such as the adamantane derivatives (amantadine and rimantadine), oseltamivir (Tamiflu) and zanamivir (Relenza). However, the search for novel and highly effective anti-influenza drugs is still on-going due to the increasing numbers of adverse effects and emergence of drug resistance cases from the use of current drugs due to genetic reassortment (antigenic shift) and point mutation (antigenic drift).

Natural compounds from *Tabernaemontana divaricata* plant are among the top 100 compounds that are potential to be neuraminidase inhibitor based on virtual screening from NADI database. It is one of more than 100 species of flowering plants that belongs to the family of Apocynaceae. This plant is locally known as "pokok akar susun kelapa" and "pokok bunga cina". *Tabernaemontana* plants have been widely used by the Chinese, Indian and Thai folks for a number of treatments including fever, pain and dysentery.

Based on *in vitro* evaluation, neuraminidase inhibition assay (MUNANA assay) of methanol and alkaloid extracts, fractions and compound isolated from this plant showed significant neuraminidase inhibition against *Clostridium perfingens*, H1N1 and H5N1 neuraminidase at 250 µg/mL concentration. It is highly anticipated that the plant will demonstrate higher neuraminidase inhibition against other newly developed strains which may results from antigenic variations (antigenic shift and antigenic drift) during annual epidemic outbreaks.

Picture 1: *Tabernaemontana divaricata* plant