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Two Dimensional Electrophoresis (2DE) guided purification novel technique in the isolation of bioactive proteins from complex mixtures

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There are still many laboratories in the East which use the conventional two dimensional electrophoresis. Progressive developments in liquid chromatography and mass spectrometry in recent years led to the obvious demise of 2DE in the West. Nevertheless, due to its robustness, low cost in acquiring and maintenance, 2DE used widely in countries like Malaysia. Efforts required to be done to provide importance to this system. One such effort is been highlighted in this paper. In the natural product research, to isolate bioactive compounds from medicinal plants, an assay will be used to detect presence of the compound within fractions after each sequential chromatography techniques such as silica gel chromatography or HPLC. This technique that will eventually lead to pure compound is known as Bioassay Guided Isolation. Adopting the principle of this technique, 2DE guided purification technique has been derived in the field of proteomics. The technique is simple whereby in place of bioassay will be a 2DE mapped database of a complex mixture such as snake venom. Next, by performing the common separating techniques such as size exclusion or ion exchange or others, fractions will be screened for presence of protein of interest. The fractions showing obvious presence of protein or its subunit stained spots in 2DE will be accepted for further fractionation. The steps will be repeated till homogeneity is achieved. This technique will be illustrated accordingly by the isolation of rhodocetin. In this example, rhodocetin a potential therapeutic protein contained in *Calloselasma rhodostoma* snake venom will be purified successfully using 2DE guided purification technique.

Biography

Jaya Vejayan has completed his PhD from University Malaya, a premier University in Malaysia. In his MSc he was involved in isolating bioactive compounds from the medicinal plant, *Ipomea pes caprae*, known to be an antitoxin to jellyfish toxins. While in his PhD, he used proteomics to study proteins in various snake venoms in Malaysia. Accordingly, he merged knowledge together to derive the 2DE guided purification technique.

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