



Marine Phytochemical and Thin Layer Chromatography Analyses of Whole Body of *Asterias rubens* Linnaeus (Starfish) Originated in Cambodia

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Abstract: *Asterias rubens* Linnaeus (Family: Asteriidae; English name: Starfish; Khmer name: *Pkai Samot*) native to Cambodia has the ability to treat inflammatory human diseases such as pain, arthritis, and hay fever. Moreover, it has antibacterial and antiviral activities against human bacterial pathogens and virus. This study aimed at determining the phytochemicals and Thin Layer Chromatography (TLC) profile of the whole body of *Asterias rubens* Linnaeus originated in Cambodia. The dry form of *Asterias rubens* Linnaeus whole body was collected from the local medicinal plant drugstore, Phnom Penh, Cambodia, in February 2018. The marine body was authenticated with the voucher specimen (UPFOPMP-120002) of University of Puthisastra (UP)-Herbarium. The body was pulverized and subjected to the extraction with ethanol by using the Maceration Extraction (ME) method. The ethanolic extract was, in turn, subjected to the analyses of phytochemical constituents and TLC. The ethanolic extract of *Asterias rubens* Linnaeus whole body was positively tested of alkaloids, saponins, and resins. The TLC analysis was evaluated with the mobile phase system of Toluene:Ethanol (9:1) and investigated under 254-366 nm UV light and 10%-H₂SO₄, separating 14 compounds as the following R_f values 0.09, 0.11, 0.13, 0.16, 0.18, 0.20, 0.22, 0.24, 0.29, 0.31, 0.35, 0.44, 0.78 and 0.89. It is concluded that the presence of these phytochemicals and the TLC profile of *Asterias rubens* Linnaeus whole body may be responsible for the marine medicinal purpose and for the benefit of future research in term of bioactive compound identification, isolation, and elucidation.

Keywords: *Asterias rubens* Linnaeus, TLC, Marine phytochemicals, Cambodia

INTRODUCTION

Asterias rubens Linnaeus (Family: Asteriidae; English name: Starfish; Khmer name: *Pkai Samot*) native to Cambodia has the ability to treat inflammatory human diseases such as pain, arthritis, and hay fever. Moreover, its curative abilities are by repelling bacteria and viruses that cause diseases in human beings (Reed, 2017). However, the standardization of the drug components of Cambodian *Asterias rubens* Linnaeus remains scant attention. This investigation was conducted to determine and identify the phytochemical constituents and Thin Layer Chromatography profile of the whole body of *Asterias rubens* Linnaeus originated in Cambodia.

MATERIALS AND METHODS

The dry form of *Asterias rubens* Linnaeus whole body was collected from the local medicinal plant drugstore, Phnom Penh, Cambodia, in February 2018. The marine body was authenticated with the voucher specimen (UPFOPMP-120002) of the University of Puthisastra (UP)-Herbarium. The body was pulverized and subjected to the extraction with ethanol by using the Maceration Extraction (ME) method. In turn, the ethanolic extract were subjected to the analyses of phytochemical constituents and Thin Layer Chromatography. These experiments were conducted in Pharmacognosy Laboratory, Faculty of Pharmacy, University of Puthisastra, Cambodia.

RESULTS AND DISCUSSION



Figure 1. Starfish collected from local plant drugstore, Phnom Penh, Cambodia.

Ethanol Extracting Yield = 5.63%

Table 2. R_f values of ethanolic extract of *Asterias rubens* Linnaeus whole body detected by 254-366 nm UV and 10%-H₂SO₄.

Marine Product	Detectors	R _f values [MPS: Toluene:Ethanol (9:1)]
Ethanolic extract of <i>Asterias rubens</i> Linnaeus whole body	254 nm UV	0.18, 0.20, 0.24, 0.44, 0.78
	366 nm UV	0.11, 0.16, 0.29, 0.44
	10%-H ₂ SO ₄	0.09, 0.13, 0.19, 0.22, 0.24, 0.31, 0.36, 0.44

Wikarta and Kim (2016) reported the anti-inflammatory activities of starfish; however, none of any research has studied the standardization of the phytochemicals and the TLC profile of the *Asterias rubens* Linnaeus.

Figure 2. TLC analysis of ethanolic extract *Asterias rubens* Linnaeus whole plant under the mobile phase system Toluene:Ethanol (9:1).

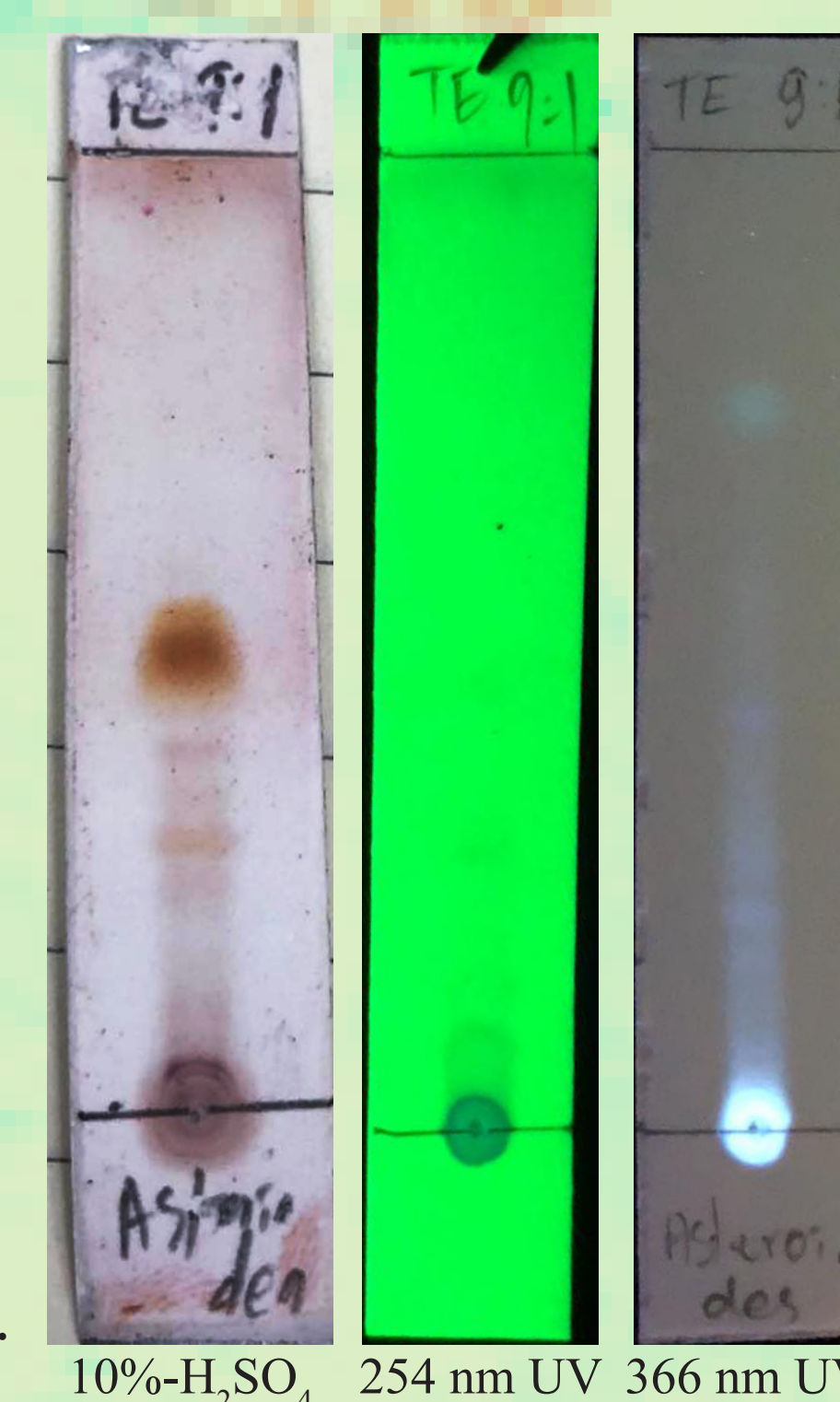


Table 1. Phytochemical evaluation of ethanolic extract of *Asterias rubens* Linnaeus whole body.

Phytochemicals	Tests	Ethanolic extract of <i>A. rubens</i> whole body
Alkaloids	Dragendorff	Positive
	Wagner	Positive
	Mayer	Positive
Phenolic compounds	Ferric Chloride	Negative
Tannins	Ferric Chloride	Negative
Saponins	Froth	Positive
Resins	Turbidity	Positive

CONCLUSION

The presence of these phytochemicals and the TLC profiling of *Asterias rubens* Linnaeus whole body may be responsible for the marine medicinal purpose and of benefit for the future research in term of bioactive compound isolation and *in-vitro* or *in-vivo* studies.

REFERENCES

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