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Marine Phytochemical and Thin Layer Chromatography Analyses of Whole Body of *Hippocampus borboniensis* Duméril (Seahorse) Originated in Cambodia

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Abstract: Cambodian seahorse or *Hippocampus borboniensis* Duméril (Family: Syngnathidae; Local name: *Ses Samot*) possesses anti-tumor, anti-aging, anti-fatigue, anti-prostatic hyperplasia activities and can be used for the treatment of the tumor, aging, fatigue, thrombus, inflammatory, hypertension and impotence. This study aimed at determining the phytochemicals and Thin Layer Chromatography (TLC) profile of the whole body of *Hippocampus borboniensis* Duméril originated in Cambodia. The dried form of *Hippocampus borboniensis* Duméril 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-120001) of the University of Puthisastra (UP)-Herbarium. The body was pulverized and subjected to the extraction with ethanol by using the Ultrasocination-Assisted Extraction (UAE) method. The ethanolic extract was, in turn, subjected to the analyses of phytochemical constituents and TLC. The ethanolic extract of *Hippocampus borboniensis* Duméril whole body was positively tested of alkaloids, phenolic compounds, flavonoids, and essential oils. The TLC analysis was evaluated with the mobile phase system of Toluene:Methanol (9:1) and investigated under 254-366 nm UV light and H_2SO_4, separating 10 compounds as the following R_f values 0.09, 0.13, 0.16, 0.39, 0.47, 0.56, 0.67, 0.80, 0.89 and 0.98. The presence of these phytochemicals and the TLC profile of *Hippocampus borboniensis* Duméril whole body may be responsible for the marine medicinal purpose and of benefit for future research in terms of active compound elucidation.

Keywords: *Hippocampus borboniensis* Duméril, TLC, Marine phytochemicals, Cambodia

INTRODUCTION

Cambodian seahorse or *Hippocampus borboniensis* Duméril (Local name: Ses Samot) (Family: Syngnathidae) possesses the potential to cure infertility, baldness, asthma, and arthritis (Kumaravel et al., 2012). They also can be used for the treatment of tumors, aging, fatigue, thrombus, inflammatory, hypertension and infertility (Chen et al., 2015). However, less scientific document reported the standardization of the drug properties of Cambodian *Hippocampus borboniensis* Duméril. This study aimed at determining the phytochemicals and Thin Layer Chromatography profile of the whole body of *Hippocampus borboniensis* Duméril originated in Cambodia.

MATERIALS AND METHODS

The dry form of *Hippocampus borboniensis* Duméril whole body was collected from the local medicinal plant drugstore, Phnom Penh, Cambodia, during February 2018. The marine body was authenticated with the voucher specimen (UPFOPMP-120001) of the University of Puthisastra (UP)-Herbarium. The body was pulverized and subjected to the extraction with ethanol by using Ultrasocination-Assisted Extraction (UAE) method. The ethanolic extracts, in turn, were subjected to the analyses of phytochemical constituents and to the profiling of TLC R_f values. These experiments were approved by the UP research committee and conducted at UP, Cambodia.

RESULTS AND DISCUSSION

Table 1. Phytochemical tests of the ethanolic extract of Hippocampus borboniensis Duméril whole body.

Phytochemicals	Tests	Ethanolic extract fo *H. borboniensis* whole body
Alkaloids	Dragendorff	Positive
	Wagner	Positive
	Mayer	Positive
Phenolic Compounds	Ferric Chloride	Positive
Tannins	Ferric Chloride	Negative
Flavonoids	Ammonium	Positive
Essential Oils	NaOH-HCl	Positive

Most of the studies reported the medicinal uses of *Hippocampus borboniensis* Duméril (Kumaravel et al., 2012; Chen et al., 2015).

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

Table 2. R_f values of ethanolic extract of *Hippocampus borboniensis* Duméril whole body detected by 254-366 nm UV and 10%-H_2SO_4.

Marine Product	Detectors	R_f values [MPS: Toluene:Methanol (9:1)]
Ethanolic extract of *Hippocampus borboniensis* Duméril whole body	254 nm UV	0.09, 0.16, 0.67
	366 nm UV	0.13, 0.40
	10%-H_2SO_4	0.16, 0.39, 0.47, 0.56, 0.67, 0.80, 0.89, 0.98

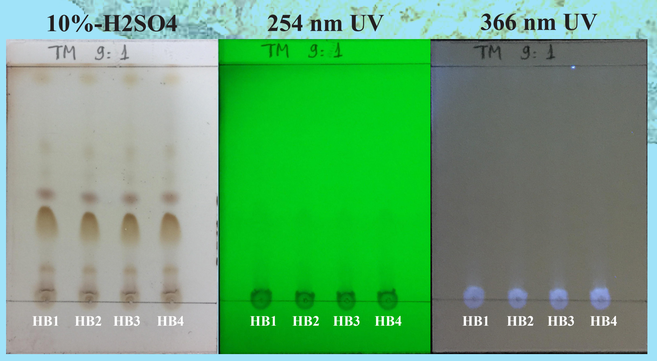

Figure 2. TLC analysis of ethanolic extract of *Hippocampus borboniensis* Duméril whole body under the mobile phase system Toluene:Methanol (9:1).

CONCLUSION

The Cambodian *Hippocampus borboniensis* Duméril whole body contains phytochemicals. Under the extraction with ethanol, the whole body of *Hippocampus borboniensis* Duméril is well separated with the mobile phase of Toluene:Methanol (9:1). This may be responsible for the marine medicinal purpose and of benefit for future research in terms of bioactive compound isolation.

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