



**DETERMINATION OF ANTHELMINTIC ACTIVITY OF *PIPER*
SARMENTOSUM LEAVES EXTRACTS**

By

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ABSTRACT

DETERMINATION OF ANTHELMINTIC ACTIVITY OF *PIPER SARMENTOSUM* LEAVES EXTRACTS

Helminthiases are one of the most prevalent diseases and can affect the global health by causing serious and chronic diseases which eventually lead to death. Currently, control strategy for this problem is the usage of the anthelmintic drug. Nowadays, the anthelmintic drug that is used to treat human gastrointestinal nematodes has developed resistance and becoming less responsive. The alternative strategy may be the use of natural products that have an anthelmintic properties. Furthermore, there were many medicinal plants has been reported to possess anthelmintic activity. *Piper sarmentosum* is one of the plants within Piperaceae family, locally known in Malaysia as 'Daun Kaduk' or 'Pokok Kaduk' and were largely found in India, South East of Asia and Africa. The leaves of family Piperaceae have showed a potent anthelmintic activity and this may be described by the fact that several compounds like alkaloid, tannins, polyphenol and flavonoid may responsible for anthelmintic activity of plant. The present study aimed at the *in vitro* study of anthelmintic activity of *Piper sarmentosum* leaves extracts against *Eudrilus eugeniae*. *Eudrilus eugeniae* were used as tested worms because of resemblance of anatomy and physiology with the human gastrointestinal nematodes. *Piper sarmentosum* were extracted using three different extraction solvents which includes aqueous, ethyl acetate and methanol. The crude extract of *Piper sarmentosum* leaves from different extraction solvents then were tested on *Eudrilus eugeniae* for three different concentrations which at 40 mg/ml, 60 mg/ml and 80 mg/ml. the anthelmintic activity were assessed by the time taken for paralysis and death of *Eudrilus eugeniae*. All the extracts showed significant ($P < 0.05$) compared with the standard drug. The present study showed that all three different solvents of *Piper sarmentosum* leaves extract showed a potent anthelmintic activity showing the less time for paralysis and death compared to the standard drug (albendazole). At concentration of 80 mg/ml of methanol extract of *Piper sarmentosum* leaves, it showed the shortest time to paralyze and death which was at 4.4 and 6.7 minutes respectively. Besides that, result were also showed that the time taken for paralysis and death were decreased as the concentrations were increased. Consequently, methanol extracts demonstrated the most significant anthelmintic activity as compared to aqueous and ethyl acetate extract. In conclusion, the *Piper sarmentosum* leaves might be used as anthelmintic agents and further studies are needed to isolate the possible anthelmintic principles in them.

Keywords: *Piper sarmentosum*, helminthiases, anthelmintic, anthelmintic resistance, *Eudrilus eugeniae*

CHAPTER 1

INTRODUCTION

1.1 Background of the study

It is estimated that 80% of people worldwide are use medicinal plants or herbs which includes leaves, roots, berries, seeds, barks and flowers as an organic and natural remedies (Picking *et al.*, 2011). Medicinal plants also have identified and play a major role in many ancient medication of the Asian countries including India (Ayurvedic and Unanic systems), China (Wu-Hsing) and also Malaysia (Unani systems) and nowadays they are still followed ancient medication in both developed and developing countries for decades (Kanba *et al.*, 1998; Vogel *et al.*, 1991; Wong *et al.*, 1998). Moreover, mostly people in Asian countries obtained extra incomes by collecting and selling medicinal plants and herbs from forest or on their lands itself.

For decades, Malaysia had a large-scale variety of medicinal plants and for about 1300 medicinal plants species have been identified in Peninsular Malaysia alone (Burkill, 1935). Malaysiaethno medicinal practices have been influenced by Indonesian, Indian, Chinese, and Orang Asli ethno medicinal practices even though Malaysian ethno medicinal practices are derived from Unani systems of medicine (Zakaria & Mohd, 1994). Moreover, herbal products has form a major component in Malaysia medicine system and also it is reported that medicinal plants were evaluated to have an annual projected growth rate ranging from 15-20% with a value of RM 4.6 billion in the Malaysian natural product marketplace (Jamal, 2006; Khatun *et al.*, 2011). It is estimated that about 7411 plants species have been recorded in Sabah and about 80% of native plants were used by local people. Besides that, it were also stated that approximately 1200 medicinal plants were used for state-wide for medicinal purposes (Kulip, 2003; Kulip *et al.*, 2010).

Furthermore, medicinal plants are believed to make various bioactivities compounds for biological functions which include protection against various microorganisms, insects and fungi. Bioactivities compounds in medicinal plants