

DEDICATION

To the soul of my mother,

To my beloved father

*The man who stood with all care,
kindness, generosity and support
during all the time taken to finish this
study.*

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ABSTRACT

This experiment was carried out at Shambat area during the period of March2004-March2005. The purpose of this study was to evaluate the efficacy of *Solenostemma argel* (Hargal), and *Calotropis procera* (Usher) against *Anopheles arabiensis* (Patton) and *Culex quinquefasciatus* (Say) mosquito larvae. The synthetic larvicide's Abate (Temphos) was also used in the study as standard for comparison.

Hargal water extract was obtained from the blend of its leaves, stems and fruits and that of Usher was obtained only from its leaves. All the plants used in this research were brought from Khartoum State and mosquito larvae were delivered from Sennar(Malaria Training Center) and also from several parts of Khartoum State. The laboratory tests of the standard basic measurement were done in accordance to the recommendations of the World Health Organization. The degree of toxicity of each plant extract in this experiment was estimated through the lethal dose of 50% (LD₅₀) of the tested mosquito larvae by the help of the probit analysis. Analysis of variance was also used to determine the significant differences between the different concentrations of each plant and also the difference between the types of the used plants and also between the two species ofg mosquito larvae. From these values it was found that *Culex* was

more sensitive to the concentrations than *Anopheles*. The synthetic insecticide “Abate” gave best control against the larvae of both mosquitoes. Both Hargal and Usher were potent against the mosquito larvae although Hargal gave better control compared to Usher. Persistent test of Hargal water extract was also done which showed higher efficacy up to the 6th day by means of the higher concentrations and even the lowest one (0.25%) was satisfactory up to 4th day.

This study showed that the water extract of both Hargal and Usher proved their suitability for controlling mosquito larvae and so they could be a good substitute for synthetic chemicals.

الخلاصة العربية

أجريت هذه الدراسة بمنطقة شمبات خلال الفترة من مارس ٢٠٠٤ - مارس ٢٠٠٥م و كان الغرض من الدراسة هو تقييم كفاءة نباتي الحرجل *Solenostemma argel* والعشر *Calotropis procera* في مكافحة يرقات نوعين من البعوض المعروف: الأنوفلس *Anopheles arabiensis* والكيولكس *Culex quinquefasciatus*. في الدراسة تم تحديد قابلية يرقات كل من النوعين تجاه نباتي الحرجل والعشر كما تم استخدام مبيد اليرقات الأبييت (Temephos) في هذه الدراسة للمقارنة. مستخلص الحرجل المائي تم الحصول عليه من خليط من الأوراق والثمار والسيقان، وتم الحصول على مستخلص العشر المائي للأوراق فقط. تم استجلاب العينات النباتية من ولاية الخرطوم، وتم الحصول على يرقات الباعوض من سنار (مركز تدريب الملاريا) وكذلك من عدة مناطق من ولاية الخرطوم. وأجريت الاختبارات المعملية للطرق الأساسية القياسية تبعا لتوصيلت منظمة الصحة العالمية. قُدرت درجات السمية لكل من المستخلصات النباتية عن طريق حساب الجرعة المميته لخمسين بالمائة (ج م ٥٠) من جملة اليرقات المختبرة لكل تجربة عن طريق استخدام تحليل البروبيت (Probit) كما تم ايضا استخدام التحليل الاحصائي المعروف بتحليل التباين (ANOVA) لتحديد الفروقات المعنوية للسمية بين التركيزات المختلفة لكل مستخلص نباتي، وبين النباتات المستخدمة، وأيضا بين يرقات نوعي البعوض. اوضحت النتائج أن نوع الكيولكس كان اكثر حساسية للتركيزات من نوع الانوفلس، ما اوضحت ان مبيد الابييت المصنع اعطى اعلى نسبة مكافحة ليرقات كل من نوعي البعوض، ايضا كل من نبات الحرجل والعشر كان له فاعلية ضد يرقات البعوض لكن تأثير نبات الحرجل كان هو الاقوى مقارنة بالعشر. ايضا اجري اختبار لتحديد مدى ثبات المستخلص المائي لنبات الحرج باستخدام ثلاثة تركيزات (١% و ٠.٥% و ٠.٢٥%) ، اوضحت النتائج ان التركيز الأعلى استمرت فاعلية حتى اليوم السادس، بينما استمرت فاعلية التركيز الأدنى حتى اليوم الرابع للاختبار.

اوضحت هذه الدراسة ان المستخلصات المائية لنباتي الحرجل والعشر اثبتت فعاليتها وكفاءتها في مكافحة نبات البعوض وبالتالي يمكن استخدامها كبديل جيد للمركبات الكيميائية المصنعة.