SUMMARY OF THE RESEARCH WORK

Nettings were treated with insecticides by conventional method and efficacy was compared with long lasting insecticide treated net against three mosquito species viz., *Culex quinquefasciatus*, *Aedes aegypti* and *Anopheles stephensi*. The four main efficacy criterion assessed were Knockdown, Mortality, Irritancy and Blood feeding inhibition.

I. **Knockdown and Mortality**

Conventionally treated mosquito nettings with different insecticides were effective against the mosquito species tested when assessed under unwashed condition.

Washing reduced the efficacy of the conventionally treated nets both in terms of knockdown and mortality. Nets treated with Etofenprox were effective upto 3 washes followed by Lambda cyhalothrin, Deltamethrin and Permethrin. A quick reduction in efficacy both in terms of knockdown and mortality was observed in the netting treated with Bifenthrin when washed.

Mortality and knockdown exhibited by LLIN, Olyset net against the mosquito species tested was quite consistent at different washings when compared with the conventionally treated mosquito netting.

A decline in knockdown and mortality was observed when conventionally insecticide treated nettings and Olyset net evaluated on Permethrin resistant *Anopheles*. Mortality and knock down decreased with generation of insects and washings of netting.
II. **Irritancy**

Netting treated with Lambda cyhalothrin had better irritant effect against *Culex quinquesfasciatus* followed by Bifenthrin and Olyset net when under unwashed condition.

Irritancy of nettings treated with Etofenprox, Lambda cyhalothrin and Olyset net were on par against *Aedes aegypti*.

Permethrin and Etofenprox treated nets (unwashed) were on par in terms of irritancy followed by Olyset net against *Anopheles*.

Washing reduced the irritancy of the nettings treated conventionally against all the mosquito species tested.

Reduction in irritancy offered by Olyset net with washing against (susceptible) mosquito species was not appreciable.

Insecticide treated nettings (conventionally) served as poor irritants against resistant *Anopheles*.

Washing did not affect the Irritancy of Olyset net against resistant *Anopheles*.

III. **Median Time Knockdown (MTKD)**

Etofenprox treated netting (unwashed) recorded less MTKD and was on par with Olyset net followed by Lambda cyhalothrin and Permethrin.

Washing of conventionally treated nettings increased MTKD which speaks the loss of efficacy. MTKD exhibited by Olyset net did not differ appreciably with washing.
IV. Blood Feeding Inhibition (BFI)

Unwashed nets offered better blood feeding inhibition than the washed nets and were on par with Olyset net. Though the initial performance of all the nettings were on par, with washings Etofenprox and Lambda cyhalothrin treated nettings (conventional) were found to perform better than the other insecticide treated nettings.

V. Storage

Storage of Insecticide treated nettings (without washing) upto 6 months does not affect the efficacy against mosquito species testes both in terms of knockdown and mortality.

Washing did not affect the Blood feeding inhibition of Olyset net against the mosquito species (susceptible) tested.

BFI offered against resistant Anopheles by conventionally treated nettings decreased with generation and washings.

Olyset net registered less BFI against resistant Anopheles when compared to susceptible.

VI. Acute Toxicity Studies in small animals

The toxicity was studied only with LLIN

Oral LD$_{50}$ of Olyset net is greater than $> 2000$ mg/kg b.w.

Accidental oral contact of Olyset net is not harmful to humans.

Dermal contact of Olyset net will not cause any adverse skin reaction like erythema and eschar formation.

VII. Health monitoring studies

Continuous use of Olyset net does not cause any adverse health effects among users.