J Bacteriol Parasitol 2018, Volume 9
DOI: 10.4172/2155-9597-C2-050

Therapeutic efficacy of Artemether Lumefantrine (Coartum) in outpatients with uncomplicated *Plasmodium falciparum* Malaria at Bonosha Health Center Shashogo Wereda, Hadiya Zone, Southern Ethiopia

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Statement of the problem: Drug resistance is the most serious problem in accomplishing control of malaria. The spread of *P. falciparum* resistance to available drugs, the vector's resistance to insecticides and lack of an effective vaccine, composed with a socioeconomic instability in many malaria-endemic regions, had a negative impact on malaria control. Therefore, effective curative chemotherapy considered as the primary approach to malaria control.

Methodology: A 28 days *in vivo* drug efficacy study was conducted at Bonosha health centre from April to September 2016. seventy-nine patients with microscopically confirmed *Plasmodium falciparum* malaria, aged 6 months and above, were enrolled and treated with coartum for three days. Recurrence of parasitaemia and clinical condition of patients were assessed on day 1, 2, 3, 7, 14, 21, & 28 during the 28 days follow-up period. The levels of haemoglobin in the study participants were determined at baseline and end of the study.

Finding: From 87 patients included in the study, 79 patients completed a 28 days follow up study. Eight patients excluded from the study based on the exclusion criteria. Among the recruited study participants, males were higher in proportion compared to females (47 were males and 32 were females). The median age of study participants was 23 (range: 4 to 59). During enrolment, 41 (52%) had a history of fever and 38 (48%) had fever. The duration of illness of the patients before enrolment was 3.05 ±1.41 (mean ± SD) days. In this study, 1(1.3%) patient showed late parasitological failure and the cure rate of Coartem in the study area was 98.7%. The Kaplan-Meier survival estimate showed a 0.013 cumulative incidence of therapeutic failure. The geometric mean of parasite at day 0 was 11,026.6parasites/µl. Significant (P= 0.01) increase was observed in the haemoglobin level between the baseline and day 28.

Conclusions: The six dose regimen of Coartum showed therapeutic efficacy of (98.7%) in the treatment of uncomplicated *Plasmodium falciparum*. A 1.3% coartum treatment failure, rapid clearance of fever and asexual parasitaemia, improvement in mean haemoglobin level was detected in the study participants.

Molecular epidemiological genetic diversity and patterns of gene flow in *Haemonchus* species affecting domestic ruminants in Egypt

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Parasitic gastroenteritis brought on by *H. contortus* is the major compel in Egyptian sheep industry and their effects on production, animal wellbeing and welfare is likely to increase. Our study recorded *Haemonchus* species dissemination, hereditary differences and population structure among various hosts utilized from amplification and sequencing of mtDNA cytochrome oxidase subunit I (COI) gene distinguished at 709 bp and have been submitted in the gene bank with accession numbers (KT826575, KT826574, KT826573 and KT826572) for sheep, goat, cattle and camel, individually. The main identity percent was 93.5% amongst sheep and goat isolate with deviation percent 4.4%. The most reduced character percent was 80.2% amongst sheep and camel isolate with divergence percent 21.9%. The phylogenetic tree indicated clustering of sheep, goat and cattle isolates revealed that high rates of gene flow are operating among population and among various ruminant hosts as a result of intensively managed flocks. In contrast, *H. longistipes* confined from Egyptian camel indicated little homology with *H. contortus* and was the hereditarily most distinct taxa without clustering with different hosts in phylogenetic analysis. COI haplotypes from Egypt were contrasted with Haemonchus isolates from different countries to elucidate the population structure revealed that our isolates indicated most elevated identity with *Haemonchus* isolated from Pakistan. We likewise that *H. contortus* from sheep, goat and cattle exist in same Pakistani *H. contortus* cluster in phylogenetic tree and similarly *H. longistipes*. To our knowledge, these results can be used in a context of new gastrointestinal control approaches integrating more ecological tools. This work is the principal concentrate on which demonstrated hereditarily that *H. longistipes* is *Haemonchus* species of Egyptian camel.