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## The effects of Aphanizomenonflos -aquae (AFA) on fracture management in adult African donkeys (*Equus africanus*)

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The use of *Aphanizomenonflos-Aquac* (stem enhance<sup>®</sup>) to hasten fracture healing in six clinical cases of compound, mid shaft metacarpal, and metatarsal fractures managed by closed reduction using fiber glass cast and three experimental cases of compound mid shaft metacarpal and metatarsal fractures managed by internal reduction using bone plates and cancellous screws was evaluated for sixteen weeks in Adult African donkeys with average age of eight years. Nine donkeys were used for the study; five were treated with AFA, while four were controls that were not given AFA. Animals in the study groups were administered orally 2 capsules of *Aphanizomenonflos-Aquac* (AFA) (5 mg 7/52) daily each for the first two weeks of a month and for 3 consecutive months. However, the control was not given AFA. Both groups were managed clinically using the same post operative parameters. Hematological parameters (PCV, WBC, Total protein, Hemoglobin concentration, total white blood count), calcium and phosphorus serum assay, stem cell estimation (count) were carried out for both groups and results obtained were analyzed statistically. Although hematological values did not alter significantly ( $P>0.05$ ) for both groups, stem cell count and total protein were significant ( $P<0.05$ ) in the AFA treated groups. Post operative radiographs were taken at 0, 4, 8, 12 and 16 weeks, at 4 weeks 100% ( $n=9$ ) of the treated groups had appreciable level of callus being formed, between 8 to 12 weeks, 6 study donkeys (66%) had their fracture line disappearing and bone remodeling had commenced. Both study and control group were subjected to locomotive assessment test 16 weeks post surgery. The study group exhibited good stance, normal gait and absence of pain while the control walked with a limp and there was obvious pain. Although post surgical complication like wound dehiscence and infection occurred in 20% ( $n=2$ ) of the cases managed without stem enhance, a success rate of 87% was achieved during the entire procedure. The use of AFA significantly ( $P<0.05$ ) reduced the average healing time to  $13\pm 0.5$  weeks as against the control that had  $27\pm 0.8$  weeks as average, although healing time differed slightly based on the method of reduction employed. AFA produced a superior healing quality as evidenced by the post operative gait and absence of infection in the study group, therefore facilitating the early return of the study group to active physical exercise. It is concluded that *Aphanizomenonflos-Aquac* (AFA) should be used when treating cases of fracture as it has the ability to hasten fracture healing.

### Biography

Gabriel Enenche Ochube bagged his PhD from Ahamadu Bello University, Zaria as an equine Orthopedic Surgeon. He was Director of Clinics at Gombe State Veterinary Hospital where he worked for 2 decades as an equine practitioner. During the period under review, he held various positions. He has many publications and currently is a Lecturer in the same university where he teaches both undergraduate & post-graduate courses in equine orthopedic surgery.

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