Additions to the fungi of Kerala II
V.B. Hosagoudar

Meliola cadigensis Yates var. toddaliae Hosag. et al.
TBGT 299, HCIO 43617.

Meliola caesalpiniae Hansf. & Deight. var. indica Hosag.& H. Biju
On leaves of Caesalpinia sappan, TBGRI campus, Palode, Thiruvananthapuram,
TBGT 431, HCIO 43996.

Meliola canthii-angustifolii Hosag.
On leaves of Canthium sp., Athirimula, Thiruvananthapuram, 26.iii.1996, V.B.
Hosagoudar TBGT 87.

Meliola capsensis (Kalch. & Cooke) Theiss. var. allophylicola Hansf. & Deight.
On leaves of Allophylus cobbe, Kombe, Meenmutty, Thiruvananthapuram,
TBGT 390, HCIO 43826; Allophylus sp., Wynad Periya, Wynad, 27.xii.2002,
M. Kamarudeen & P.A. Jose TBGT 2031.

Meliola capsensis (Kalch. & Cooke) Theiss. var. dimocarpi Hosag. & Abraham
On leaves of Dimocarpus longan, Deer rehabilitation centre, Tennimal, Kollam,
14.x.2002, A. Manoj Kumar TBGT 971, HCIO 44690; Dimocarpus sp., on
the way to Vazhachal, Trissur, 23.x.2002, H. Biju & Manoj Kumar TBGT 980, HCIO
44699.

Meliola capsensis (Kalch. & Cooke) Theiss. var. indica Hansf.
On leaves of Sapindaceae member, Ramagirikotta, Palghat, 16.vii.2002, A.
Manoj Kumar & H. Biju TBGT 812, HCIO 44526.

Meliola capsensis (Kalch & Cooke) Theiss. var. malayensis Hansf.
On leaves of Nephelium longan, Kombe, Meenmutty, Thiruvananthapuram,
TBGT 54; TBGRI campus, Palode, Thiruvananthapuram, 25.xi.2000, T. Sabu
TBGT 1226, HCIO 45200; Sasthamanada, Sankail, Kollam, 23.xi.2004, V.B.
Hosagoudar et al. TBGT 1924, HCIO 46278; 23.xi.2004, V.B. Hosagoudar et al.
TBGT 1891, HCIO 46128; 23.xi.2004, V.B. Hosagoudar et al. TBGT 1668, HCIO
46256; Nephelium sp., Wynad, 21.v.2002, M. Kamarudeen TBGT 785, HCIO
44495.

REFERENCE
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Fungi of Kerala. Tropical Botanic Garden and Research Institute, Palode,
Thiruvananthapuram, 151 pp.

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STUDY OF ANAESTHETIC EFFICACY OF DETOMIDINE-KETAMINE COCKTAIL IN
BUDGERIGARS

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Now-a-days alpha-2-adrenocepter agonists are in common use as
sedatives and anaesthetics for avian species because these are
considered very effective, safe and easy to administer parenterally for
surgical and non surgical procedures. Lees (1991) described that
detomidine is a potent, non-narcotic, sedative, muscle relaxant and
analgic. High doses of detomidine produce deep sedation, leading
to loss of consciousness and a light plane of anaesthesia. Freed and
Baker (1989) reported that xylazine, detomidine and medetomidine are
usually used in combination with ketamine. Valvered et al. (1993) stated
that in most birds, intramuscular injections are best given in the pectoral
muscles. In flightless birds, such as ratites, pectoral muscle mass is
minimal, thus the thigh muscles are preferred. Heaton and Brauth
(1992) stated that detomidine-ketamine combinations results in
reduction of the required doses, smooth induction and recovery and
better muscle relaxation. Muhammad et al. (1993) studied the
anaesthetic effect of detomidine-ketamine in chicken. They reported
that the use of detomidine-ketamine cocktail readily and smoothly
induces loss of righting reflex, good muscle relaxation, hypoventilation
while corneal reflex persists during anaesthesia. Booth and McDonald
(1988) reported that among the dissociative agents, ketamine is the
least potent anaesthetic and acts for the shortest period. It is a potent
inhibitor of GABA binding in C.N.S. It induces amnesia and anaesthesia
of stages I and II but not stage III anaesthesia. Valvered et al. (1993)
concluded that ketamine is rarely used alone because it is associated
with poor muscle relaxation, muscle tremors, myotonic contractions,
opisthotonus and rough recoveries. The drug may be administered
alone but is more commonly used together with either alpha-2-
adrenegic drugs, diazepam or azaperone, depending on the species
involved. In Pakistan different studies have been conducted on
detomidine-ketamine cocktail efficacy in equine, canine, poultry and
some exotic birds. This project was designed to study the anaesthetic
and analgesic effect of detomidine-ketamine cocktail in budgerigars.

Experimental birds: Ten adult and healthy budgerigars (Melopsittacus
undulatus), comprising of three males and seven females, were
purchased from a local market (Lahore, Pakistan). All birds were kept in
experimental room of Department of Pharmacology and Toxicology,
University of Veterinary and Animal Sciences, Lahore, Pakistan. In
the experimental room the birds were provided naturalistic environment
and the temperature was maintained at 25°C. Birds had ad libitum
access to food and water.

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Fasting and pre-anaesthetic examination: Water and food were withheld 30 min prior to drug administration to reduce chances of vomiting. A physical examination was carried out in all birds to assess the state of general health. This examination included recording body weights, body temperatures, respiration rates, heart rates, reflexes and checking for any injuries. Mean body weight of budgerigars was 30 g.

Drug administration: For this study detomidine was used as 1% Inj. Domosedan by Farmos and ketamine was used as 5% Inj. Calypsol by Medimpex. Study was conducted in the operation theater of the surgery section, Department of Clinical Medicine and Surgery, University of Veterinary and Animal Sciences, Lahore, Pakistan.

To determine the detomidine dosage to be used in combination with ketamine at the dosage 40mg/kg b.w. (Heaton & Brauth 1992) three trial dosages of detomidine i.e. 1.2mg/kg b.w., 1.3mg/kg b.w. and 1.4mg/kg b.w. were selected within recommended dosage range for detomidine cocktails (Virtanen, 1986). Out of these dosages only one trial dosage, i.e., 1.4mg/kg b.w. induced anaesthesia as cocktail with 40mg/kg b.w. ketamine was selected for this study.

Birds were administered detomidine-ketamine cocktail at the dosages 1.4mg/kg b.w. and 40mg/kg b.w. respectively in pectoral muscle (Valvered et al. 1993) using insulin syringe (1ml).

Parameters of study: The induction period, duration of anaesthesia, recovery period, degree and duration of analgesia, body reflexes (righting reflex, toe pinch reflex, feather plucking reflex, palpebral reflex, table knock reflex, pharyngeal reflex), body temperature, respiration rate and heart rate were taken as parameters of study.

In all birds respiration rate was recorded from sternal movements, heart rate was recorded with stethoscope keeping diaphragm on left costal side and temperature was recorded from axilla.

Results and Discussion: Detomidine-ketamine induced a rapid and smooth anaesthesia in all birds and mean induction period was 1.6 ± 0.64 min. Anaesthesia was smooth but light in nature. All birds showed dorsal recumbency during anaesthesia. Except three birds, eyes of all birds closed. Mean duration of anaesthesia was 70.2 ± 30.88 min. Analgesia was very superficial and mean duration of analgesia was 27.5 ± 4.95 min. Except toe pinch reflex all reflexes i.e. righting reflex, feather plucking reflex, table knock reflex, palpebral reflex and pharyngeal reflex were absent during anaesthesia. Birds showed severe hypothermia and body temperature dropped to 98.6 ± 3.43°F during anaesthesia and it increased to 103 ± 0.10°F at the time of complete recovery. Respiration rate per minute decreased to 53 ± 25.48 during anaesthesia and increased to 100 ± 3.05 at the time of complete recovery. Heart rate per minute decreased to 150 ± 13.22 during anaesthesia and increased to 189 ± 21.36 at the time of complete recovery. Recovery from anaesthesia was extremely prolonged and rough due to the signs of neck and legs paralysis, fluttering and inability to lift up the head and body. Throughout the recovery period thermoregulatory measures were strictly followed to avoid aggravation of hypothermia and respiratory depression. Mean recovery period was 1132 ± 118.95 min. During this study detomidine-ketamine cocktail did not cause any mortality at the dosage used and all budgerigars completely recovered after 48 hours.

Conclusion
From the results of this study this is concluded that because of prolonged and rough recovery period accompanied by severe hypothermia and respiratory depression, detomidine-ketamine cocktail is not a safe and desirable anaesthetic for budgerigars at the dose used.

REFERENCES