Comparative of Skull Dimensions and their Respective Dentition in Relation to its Biting Forces in Rottweiler, Doberman, German Shepherd and Local Dogs of Malaysia

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Abstract (300 word limit)

Since the beginning of domestication, the craniofacial architectures of dogs (*Canis lupus familiaris*) have changed and modified as a result of human intervention in natural selection. Fatal attacks in humans by dogs have highlighted the importance of studying comparative anatomy in forensic science to identify the specific dog breed involved in such attack. Several studies described the biting forces for specific breeds, but thus far, no such investigation has been conducted in local dogs of Malaysia. Thus, the purpose of this study is to determine the skull dimensions and dentition to estimate and compare the biting forces in Rottweiler, Doberman, German Shepherd and local dogs of Malaysia. Twenty skulls were obtained from male dogs (five from each breed) at postmortem laboratory. The skulls were defleshed and dried. The dimensions were measured using a pair of Vernier caliper. Bite forces were estimated using lever model adapted from Kiltie, 1984. Increasing zygomatic width has stronger correlation ($p<0.01$) with biting forces compared to skull length. Rottweiler has the strongest biting forces compared to Doberman and German Shepherd. Local dogs of Malaysia have the smallest zygomatic width, thus the canine and molar biting forces are the weakest. Local dogs relatively smaller ($p<0.05$) compared to the other breeds in terms of skull dimensions and dentition. Therefore, they had the lowest biting forces. The resent study revealed that each breed has a distinct skull dimension, dentition and biting forces comparable to other published reports. The results of this study is a valuable information for Malaysian forensic and crime investigations

Image

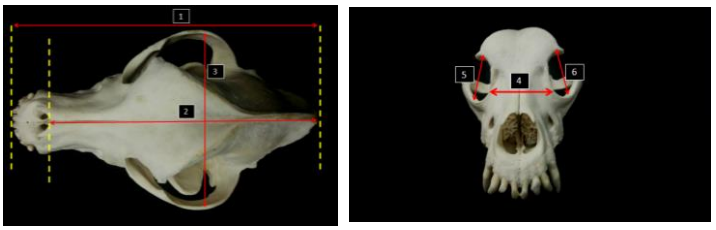


Figure 1: measurements for skull dorsal view. 1: Total length of skull 2. Length measuring from caudal end to nasal end 3. Zygomatic width

Figure 2: measurements from skull frontal view. 4: Lacrimal width 5: Right orbital width 6: Left orbital width

Recent Publications (minimum 5)

1. Kai Sin1, Ganabadi S., Azeez Okene IA, Ayahsamy S. & Sivagurnathan A. (2018). Echocardiographic Survey of Prevalent Cardiac Conditions in Dogs in Malaysia. *Proceeding: VAM congress 2018*, pg.36
2. G. Banulata, **S. Ganabadi**, T.I. Azmi & H. Yaakub. (2014). Micrsocopic changes of Ovaries in relation to Inflammatory Mediators of Blood Plasma in Superovulated Rats. Asian J. of Applied Sci. 2 (4):427-436
3. S.Y. Thannia,M. Al-Muqamar, H. Yaakub, **S. Ganabadi** & S. Sukardi. (2013). Teratogenic Effects of retinyl Palmitate During Early and Late GestationPeriods in Rats. Mal. J. Anim. Sci. 16(1): 39-46
4. F.J. Al-Saffar, **S. Ganabadi**, S. Fakurazi. & H. Yaakub. (2011). Response of Hepatic Metabolizing Enzymes & Oxidative Stress in Orally Administered Zerumbone against MIA-Induced Osteaoarthritis in rats. J. Anim. Vet. Advances. 10(5): 566-573
5. F.J. Al-Saffar, **S. Ganabadi**, S. Fakuraz &, H. Yaakub. (2011). Zerumbone improved immunorectivity of neuropeptides in monosodium iodoacetate induced knee osteoarthritis in rat. African J. Biotech. 10(18): 3646-3653



Biography (150 word limit)

Shanthi Ganabadi has been an anatomist and has a vast knowledge in both human and veterinary anatomy. She has been involved in many research work mostly related to arthritis and her current work is on forensic anatomy. She has brought in new concepts in teaching and research in anatomy. Due to lack of Veterinary Anatomist in Malaysia, she managed to create many new teaching strategies for students and at the same time were able to publish books to help students in Malaysia. Forensic Anatomy is beginning to be recognized in Malaysia and it is very important to work with human anatomist and also with investigators where this work can be used as a point of reference in the future of crime investigation.

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