Abstract:

The present investigation is concerned with the functional morphology of the jaw apparatus of the Falco tinnunculus and Melopsittacus undulatus, this is performed through the studying of the following points: I- The jaw skeleton. A full description of the morphology of the jaw skeleton of Falco tinnunculus and Melopsittacus undulatus which consists of the following four functional and kinematical unites; the upper jaw, the brain case, the bony palate plus the jugal bars and attached quadrates, and the mandible. All these units which form a highly complex integrated mechanical apparatus, was studied by using different techniques, as gross anatomy and SEM. A. The upper jaw 1) In the common kestrel, the upper jaw is a raptorial bill type. The lateral edges of the rhinotheca carry tooth-like projection this is known as maxillary tomia. While, in the budgerigar, the upper jaw is the psittacid-bill type which carry transverse ridges (filing ridges) on its dorsal surface, as well as, the presence of many sensory papillae which protrude along its lateral edge. B. The brain case The brain case of the two bird species is characterized by; 1) In the common kestrel, the brain case exhibits a reduction in kinesis due to the presence of immovable naso-frontal hinge. However, the quadrate can glide antero-posteriorly and vice versa. While, in the budgerigar, the brain case exhibits a high kinesis due to the presence of movable naso-frontal hinge. 2) The brain case of the budgerigar is characterized by the appearance of the suborbital arch which is considered as a parrot-specific structure surrounding the eye. C. The quadrate bone The quadrate bone of the two bird species is characterized by; 1) In the common kestrel, the quadrate is robust and has irregularly tetrahedral shape (H-shape), which has two mandibular condyles fitting with the articular facet on the mandible and forming a real diarthrosis joint which is the quadrato-mandibular articulation (Art.qm). Meanwhile, it is articulated to the brain case through otic and squamosal capitulum. In the budgerigar, the quadrate is delicate and has r-shape with single narrow and lateral compressed condyle which fits with the articular facet of the mandible forming uniquely quadrato-mandibular articulation (Art.qm), in addition, it is articulated to the brain case through the otic capitulum. D. The mandible The mandible of the two bird species is consisted of double rami, each ramus can be distinguished into three portions; the anterior portion (Rm), the intermediate portion (Pi) and the posterior portion (Pc) 1) In the common kestrel, the mandible carries along its lateral edges, the mandibular tomia (Mt) and contains a medial fossa and two foramens on the intermediate portion of the mandible. The posterior portion of the mandible contains two coronoid processes, as well as, the medial and short lateral process. The posterior portion of the mandible contains a fossa (Quadratic articular fossa, Faq) which is responsible for the articulation with the condyles which protrudes from the mandibular process of the quadrate bone, as well as, it incubates a posterior deep fossa (Fossa caudalis, Fca). While, in the budgerigar, the keratin covers the bony anterior portion of the mandible, and then extends anteriorly to form the broad anterior tip of the mandible without dentale bony support, as well as, carries numerous of sensory papillae like that exist on the upper jaw. The posterior portion of the mandible has just anterior coronoid process and contains shallow quadratic articular fossa (Faq) which runs obliquely from the postero-lateral to the antero-medial direction. That fossa receives the narrow and elongated single condyle of the mandibular process of the quadrate bone. II) The jaw muscles and Ligaments: 1) The jaw muscles of the common kestrel, Falco tinnunculus can be classified into: 1. Adductors of the mandibula. The adductors of the mandibula comprise of two muscles; muscle adductor mandibulae externus (pars rostralis, pars ventralis and pars profunda), and pseudotemporalis superficialis. 2. Adductors of the mandibula and depressors of maxilla. The adductor of the mandible and depressor of the maxilla group comprise of four muscles; muscle adductor mandibulae posterior, muscle pseudotemporalis profundus, muscle pterygoideus ventralis (pars lateralis and pars medialis), and muscle pterygoideus dorsalis (pars lateralis and pars medialis). 3. Depressor of the mandibula. The mandible is
The epithelium of the palate region is characterized by the disappearance of the dermal papillae. While, the pharyngeal region is covered by non-keratinized stratified squamous epithelium while the pharyngeal papillae are covered by keratinized epithelium. The epithelium of the pharyngeal region is characterized by the appearance of short and few dermal papillae. The epithelium of the roof of mouth becomes transitional-type at the region of the connection with the upper and lower jaw. In the budgerigar, the entire surface of the roof of mouth is covered with non-keratinized squamous epithelium that carries microridges, as well as, the appearance of muco-submucosal junctions. The palate, pharyngeal, and scattered papillae are covered by the keratinized squamous epithelium which is characterized by the disappearance of the dermal papillae. 3- The salivary glands The salivary glands of the common kestrel, Falco tinunculus and the budgerigar, Melopsittacus undulatus include: Lig. Internal jugomandibular (Lig.in.jm), Lig. Occipitomandibular (Lig.om), Lig. Zygomatic-suborbital (Lig.zs). III- the roof of mouth A full description of the roof of the mouth of two bird species; the common kestrel, Falco tinunculus and the budgerigar, Melopsittacus undulatus, which is distinguished into two regions; 1- the palate region and 2- the pharyngeal region, was studied from the following points of view, the following parts are described. 1- General morphology of the roof of mouth a) In the common kestrel, the palate region is relatively twice the length of the upper jaw that incubates longitudinal choana and has one medial and two lateral ridges that bears several longitudinal rows of posteriorly-directed and pointed papillae while posteriorly, the palate flaps to form a pair of distinctive palatine wings. The pharyngeal region is short, relatively half the length of the palate region and incubates a narrow infundibular fissure, as well as, numerous of the orifices of the pharyngeal salivary gland and also bears several rows of posteriorly-directed papillae which are arranged transversely on its posterior margin forming the pharyngeal papilla; b) In the budgerigar, the palate region is twice the length of the upper jaw but shorter than that of the common kestrel and incubates triangular-shaped choana, it demarked by a semicircular ridge, as well as, The surface of the palate region carries scattered posteriorly-directed papillae and some tuberosities, as well as, many pores of the anterior palatine salivary gland. The pharyngeal region is long and relatively twice the length of the palate region and incubates a narrow oval-shaped infundibular fissure on its most anterior part, as well as, the presence of numerous of scattered papillae spread over the whole surface of the pharyngeal region, associated with the orifices of the pharyngeal salivary gland. 2- The epithelium of the roof of mouth A full description of the structure of the epithelia which covers the palate and pharyngeal region of the roof of mouth, was studied by using different techniques, as gross anatomy, SEM and histology; a) In the common kestrel, the palate region of the roof of mouth is covered with highly desquamate keratinized stratified epithelium that carrying microridges on its surface. The keratinized epithelium forming the papillae that are scattered on the surface of the palate region, as well as, on the posterior margin forming the pharyngeal papillae. The epithelium of the palate region is characterized by the disappearance of the dermal papillae. While, the pharyngeal region is covered by non-keratinized stratified squamous epithelium while the pharyngeal papillae are covered by keratinized epithelium. The epithelium of the pharyngeal region is characterized by the appearance of short and few dermal papillae. The epithelium of the roof of mouth becomes transitional-type at the region of the connection with the upper and lower jaw. b) In the budgerigar, the entire surface of the roof of mouth is covered with non-keratinized squamous epithelium that carries microridges, as well as, the appearance of muco-submucosal junctions. The palate, pharyngeal, and scattered papillae are covered by the keratinized squamous epithelium which is characterized by the disappearance of the dermal papillae. 3- The salivary glands The salivary glands of the common kestrel, Falco tinunculus and the budgerigar, Melopsittacus undulatus were studied as a derivative of the epithelium of the roof of mouth and are classified according to their location as following: A. Anterior palatine salivary gland. 1) The anterior palatine gland of the kestrel is paired and are occupied the antero-medial portion of the palate region underlies the stratified squamous epithelium, while in the budgerigar, it is spread over the antero-ventral surface of the palate region and located lateral to the choana. The anterior palatine gland of each bird species is composed of a compound tubulo-alveolar type and delivers a neutral and acid mucin secretion via one pore in the kestrel, while in the budgerigar, it delivers its secretion via multiple scattered orifices on the epithelial surface of the palate region. B. Posterior pharyngeal salivary gland. 1) The posterior pharyngeal salivary gland of the two bird species is a compound tubulo-alveolar type which secreted neutral and acidic mucin via multiple scattered orifices on the epithelial surface of the pharyngeal region. The anterior palate and posterior pharyngeal salivary gland of the common kestrel give weakly reaction for protein, while in the budgerigar exhibits strong positive reaction.

الملخص:
تناولت هذه الرسالة دراسة مورفولوجية ووظيفية للجهاز المكسيكي نوع من الطيور، جرت مناطبقية في العادات الغذائية وقد تم اختيار صفر الحشرات المصري وعصور الأسترالي لمجرع الدراسة الحالية. حيث صفر الحشرات المصري نوع من أنواع الطيور المفترسة التي تسيطر على حشرات نباتية صغيرة ضحلة صغيرة في مزرعة وحيدة ودلتا النيل، بينما يعتبر العشور الأسترالي هو أحد أنواع البقايات الصغيرة طويلة الأجل أكثر الحيوانات ولا توجد بفتحة البيئة إلا في الاحتبس الأخر.

فتصراًً ودعاًً كما في أستراليا غير أن التنزل الانتقالي جعله منشأ في جميع أنحاء العالم، وفي من طبوس الزينة الحمراء في العالم وعمر أيضاً باسم الدروة أو عشور النحل. ومن الدراسات السابقة لسلوك الطيور الحمراء هو أن هذا النوع من الطيور يحلق في النهار فوق سطح الأرض بحثاً عن فرائسها والتي تتم صغار الأزهار، صغار الأعشاب، الحشرات ذات الحجم الكبير وأيضاً الصدراء. تعتمد هذه الدراسة على ملاحظاتها القوية للانخراط على فرائسها وتعتمد على فكثير في كسر الحشرات ثم تقوم بتوزيعها إلى قطع صغيرة. ويعتبر العشور الأسترالي من أنواع الطيور أكلات الحيوان حيث تقوم بتفسير الحيوان قبل نقلها وذلك باستخدام الكائنات العلوية الشكلية وذلك دراسة الجهاز المكسيكي دراسة مورفولوجية وتشريحية متكاملة حيث شملت الهيكل والعصارات الفلكلية وكذلك طائفة التحويض العصاري وخاصة سطح الدم وتشتاق مع كل من التراكب السابقة من حيث ملاحظة هذه الدراسات وعلاقتها وكذلك علاقات هذه التراكب مع بعض وتآثرها البعض في عملية الاعتنا. وفي هذه الدراسة تم استخدام عدة تقنيات مثل: الدراسات التشريحية، الدراسات البنائية، البوكيميائية وكذلك عيني الألكترون الماسح، وذلك للتفتيش بشكل دقيق على التراكب المختلفة للجهاز المكسيكي لهذه الطائرات.