

دراسات تركيبية وتطورية مقارنة على تشريح الرأس
لكل من كاركارينس ميلانوبترس (أسماك غضروفية) و لاتس كالكاريفير
(أسماك عظمية)
مع الإسناد الخاص لطرق عملية التعظم في السمكة العظمية

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**COMPARATIVE STRUCTURAL AND DEVELOPMENTAL STUDIES
ON THE HEAD ANATOMY OF BOTH *CARCHARHINUS
MELANOPTERUS* “CHONDRICHTHYES” AND *LATES CALCARIFER*
“OSTEICHTHYES”, WITH SPECIAL REFERENCE TO THE MODE
OF OSTEOGENESIS IN TELEOSTEAN FISH.**

**By
Fatma Abdul Rahman Ghedr Al-Nefeyi**

Abstract

This research is based on microanatomical study to the cranium to put keys and bases benefiting taxonomy which is considered to be very important thing for palezoology. This research depends on the study of the development of the chondrocranium for both *Carcharhinus melanopterus* (chondrichthyes) and *Lates calcarifer* (Osteichthyes) reaching to fully formed chondrocranium. This is to know the specification of the genus which both of the two fishes belong to it. Depending on the previous, we can determine the date of (phylogeny) for each of them.

This study based on anatomical comparison to the development of the chondrocranium for different embryo and larva stages for the two fishes. This is to determine timing and development of the stages in which chondrocranium starts to be cartilaginous up to homologous structures and analogous structures between them. And we were careful when we chose the embryo and larva to have a period of time in the developmental cartilaginous elements of the chondrocranium. This research depends on microanatomical study of the transverse sections at the cephalic region with graphical reconstruction of the chondrocranium for every stage of developmental stages for both of the two fishes mainly in three successive developmental stages including all the developmental

stages. In according to the main composition of the chondrocranium was discussed in both of the viscerocranium and neurocranium.

The anatomical study of the neurocranium and viscerocranium shows that both of them arise development and appear at the same time. The neurocranial floor of *Carchrahinus melanopterus* belongs to platytrabic type and this is because of the absence of interorbital septum. The neurocranial side wall of the cranium is presented as orbital cartilage which optic stalk coming from its side part to meet eye ball to a put on it. There are many foramina on this wall which the cranial nerves passed from it. Moreover, the suspension of the jaw between, neurocranium and viscerocranium is considered to be from the amphistylic type because the palatoquadrate and hyomandibular play a very important role in the suspension. The floor of the skull is distinguished with trabecular plate which goes to anterior part to form ethmoid plate and goes to posterior part to form basal plate. It was observed that an endolymphatic fossa is present and was observed in lower level than the posterior roof of the skull tectum synoticum. This low level contains two pairs of foramina.

The floor of the skull of *Lates calcarifer* belongs to the tropytrabic type because of the presence of interorbital septum. The neurocranium consists of trabecula cranii and parachordal plates and also the auditory capsule. The trabecula cranii connect together to form trabecula communis which go forward to form ethmoid plate. We also observe that parachordal plates go forward without any connecting with trabecula communis, while connecting together posteriorly to form basal plate. The crista paraotica grows on the lateral edge of the auditory capsule to play an important role in articulation with hyomandibular portion of hyosymplectic and the suspension is considered to be from hyostylic

type. Other than this the forming of tectum synoticum plus posterius from connection between auditory capsule and occipital arch.

This study depends on the sequence bones formation to know the sequence of cranial ossification which concentrates on anatomical study for the transverse sections to indicate the cartilage, dermal and compound bones with graphical reconstruction of the osteocranium. Attention is given to the study of the contents of Weberian ossicles and their origin. They consists of four small ossicles on each other. Besides a comparison for mandibular muscles and hyoidean muscles for both *Carcharhinus melanopterus* and *Lates calcarifer*.