DENTAL ENAMEL ULTRASTRUCTURE OF OREOPITHECUS: CONTRIBUTIONS TO A LITTORAL NON COMPETITIVE SELECTION THEORY OF HOMINIDS:VII

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Description of Oreopithecus (GERVAIS, 1872) enamel ultrastructure and adaptive enamel prism changes are presented. In a comparison of cercopithecoid and hominoid molars etched unaltered in 1N HC l for SEM (DOSTAL 1985, 1986, 1987,1989), earlier results of prism measures, prism packing type, intermediate thickness of enamel, by GRINE et al. (1985) concerning an Oreopithecus - hominoid affinity are further confirmed by the Dental Prism Contour Analysis (DPCA). Applied to diagnose tilt insensitive, perpendicular prism cross-sections, it offers a novel data base to assess fossil and recent primate taxonomic relationships on familial to subfamilial levels. Able to monitor on a long timescale the change in a set of prism contours, it keeps track over long periods of fast adaptive change with few fossil documents, as in the hominoid-hominine transition: DPCA overcomes a classificatory limit set by essentially similar keyhole arrangements of prism packing pattern III (BOYDE, 1964) in modern and extinct hominoid species (VRBA, GRINE, 1978 contra GANTT, 1983). A pattern III A (apes, extinct miocene hominoids) - III B (hominines) distinction was not substantiated (BOYDE, MARTIN 1982, 1983; SHELLIS, 1984; MARTIN, BOYDE, GRINE, 1988). Therefore DPCA is based on DOSTAL (1989), the first work recognising rectangular prism contours ("broad top hat") as diagnostic of hominines. As EPCA result a "broad bowler hat" Oreopithecus contour-affinity to above "broad top hat" HOMININES emerges.Compared to Ouranopithecus, Sivapithecus, Pan this result is even more convincing. It fills by parsimony ideally the "fossil gap" between "high bowler hat" Hylobates or Pliopithecus, as HOMINOIDS and the "broad top hat" Australopithecus Homo HOMININE contour. It is the HOMINID contour. Even new fossils seem unlikely to provide falsification for this Hylobatid-Hominid contour group of Oreopithecus. It is different from a taxonomically primitive Pongid-Panine contour group.In agreement with BEYNON (1991), now thin, i.e. Hylobatid enamel is the ancestral condition (contra MARTIN, 1983, 1985). Furthermore thick enamel of Ouranopithecus, Ramapithecus evolved parallel in the orangutan clade and hominids. Oreopithecus with intermediate thick enamel is now a most likely late miocene african ancestor for gorilla, pan and A. afarensis (HÜRZELER). Was Oreopithecus on an enigmatic way of enamel, C p3 and postcanine adaptation thus ? A littoral double niche refugial biome,with non competitive ecological selection, allowing canine shortening, blunting, etc., DENTAL PHASE I, due to low predation pressure; messinian littoral and sublittoral adaptation, POSTURAL PHASE II, with bipedal double niche transitions, with omnivore marine food procurement, should select an optimal, shearing force and grit resistant prism contour. That happened following EPCA in adaptive selection of a maximum of prismatic substance with a minimum of the softer interprismatic substance (MAAS, 1991). With thickest enamel able to withstand high occlusal load, linked with bunodont postcanine morphology, puncture crushing tool not weapon canines, the A. afarensis dentition, results. Highly misleading as with Ramapithecus before, was, that enamel thickness and the final shape of the crown are to a large extent determined by high ameloblast secretory activity. The thicker the enamel, the greater the influence on the final toothform (BEYNON, 1991). Teeth metric relations (SARMIENTO, 1983) indicated also an Oreopithecus HOMININE ancestry in a species-specific insular littoral, lacustrine niche (HARRISON, 1989) acording to a littoral theory (WESTENHÖFER, 1923, 1942; BUJATTI-NARBESHUBER, 1976, 1985, 1986, 1989, 1990, 1991).

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