

## MAJOR TRENDS IN THE EVOLUTION OF TEETH AND MANDIBLES IN ORNITHOPOD DINOSAURS

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Ornithopod dinosaurs have been subject of debate concerning their feeding mechanisms, principally because: (i) the possibility of a co-evolutionary path with angiosperms that radiate during the Cretaceous; (ii) the development of a pleurokinetic skull allegedly increasing mastication effectiveness; (iii) new adaptations to mastication could cause the inversion of the ratio sauropods/ornithischians genera between the Late Jurassic to the Late Cretaceous; (v) the possible analogy with ungulates: a group that also evolved a similar mastication condition.

However, more comprehensive comparative anatomical studies need to be performed; here we present evolutionary major trends evidencing the evolution of the mandible and teeth of ornithopod dinosaurs.

Conspicuous major trends observable in teeth recognised in the evolution of ornithopods are: (i) progressive transformation of teeth crown into a more lozenge-shape, (ii) development of a prominent primary ridge, (iii) increasing number of denticles (except in hadrosaurs), (iv) total occlusal area of the teeth row increases (with increasing number of teeth rows), (v) increasing of teeth per file and per position, providing a tooth battery. Concerning the mandible, the major trends are: (i) variation angle of the coronoid process relative to the anteroposterior axis of the dentary; (ii) progressive diminishment of the proportion of the coronoid and, inversely, the proportion of posterodorsal ramus of the dentary increases; (iii) progressive augmentation of the alveolar parapet proportion compared with the height of the mandible; (iv) decreasing of the surangular proportion compared with the length of the dentary; (v) splenial became progressively reduced as the tooth battery bears more teeth; (vi) absence of the prearticular in hadrosaurids.

Such adaptations may contributed to the effectiveness of food processing and competition against other herbivore dinosaurs, thus to the domination of ornithischian herbivory and decline of sauropods through the Cretaceous.

Study in progress presents comprehensive anatomical descriptions, synapomorphies and evolutionary solutions of the ornithopod mastication.