Allometry of pygidial functional divisions in Stenopareia oviformis (Trilobita): implication to behavioral characteristics.

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Based on the pygidial tergites representing growth series of the smooth and convex trilobite *Stenopareia oviformis*, areal and voluminal allometry were documented. The converted volume of the axis (*axis cV*o), the inner pleural area (*resp. AR*) and the doublural volume (*doub. Vo*) were calculated. The allometric formulae of these against pygidial axial width (pw) are as follows:

log(*axis cVo*) = 2.561log(*pw*) - 1.82 (*r*=0.992; (*K*=-3.07: negative allometry)

log(*resp. AR*) = 2.051log(*pw*) - 1.45 (*r*=0.993; (*K*=0.5: isometry)

log(*doub. Vo*) = 3.22log(*pw*) - 5.57 (*r*=0.997; (*K*=2.1: positive allometry)

These relationships mean that *resp. AR* keeps up the growth pace, while *axis cVo* and *doub. Vo* does not. During the growth, the relative voluminal quantity reduced in the former and increased in the latter, respectively. Based on the functional role of each pygidial divisions, *resp. AR* for gaseous exchange, *axis cVo* oxygen consumption and *doub. Vo* temporal storage of oxygenated hemolymph, the growth of *S. oviformis*'s pygidium resulted in increasing the abilities on instantaneous movements (increasing *doub. Vo* against decreasing *axis cVo*) such as in escaping from predators and constant gaseous exchanges (*resp. AR* against relatively reducing *axis cVo*). The former ability should have been more stressed on during the growth.