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Comparative distribution of the neuropeptides vasotocin (VT) and vasoactive intestinal peptide (VIP) in the brain of male and female blue tit and penduline tit.

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Vasopressin, VT and VIP play important roles in the sexual behaviour of vertebrates. They modulate differentially the agonistic song in songbirds. In mammals, vasopressin modulates mating behaviour. We compared VT and VIP distribution in the brains of two songbird species with different reproductive strategies: monogamous, biparental caring blue tits (Poecile coeruleus) and polygamous, uniparental caring penduline tits (Remiz pendulinus). In both species, VT cells are in the hypothalamic supraoptic, paraventricular and suprachiasmatic nuclei, bed nucleus of stria terminalis (BNST), and along the lateral forebrain bundle. Most VT fibres course to the median eminence. Some run towards the arcopallium and lateral septum (SL). Main terminal fields are in the dorsal thalamus, ventral tegmental area and pretectal area. Clear sexual differences are in the BNST and SL: cells and fibres are more numerous in sexually mature males of both species. VIP cells are in the lateral septal organ and arcuate nucleus. VIP fibres distribute extensively in the hypothalamus, preoptic area, SL, diagonal band of Broca. They are also found in the BNST, nucleus taeniae, robust nucleus of the arcopallium, caudal ventral hyperpallium, accumbens and brainstem.The overall distribution of VT and VIP is similar to that in galliform and oscine brains. Further analysis might reveal differences between the two species with different strategies and patterns reflecting the reproductive stage.

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