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The behavioral effect of central vasopressin

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Beside its role in the salt-water homeostasis vasopressin (VP) plays a crucial role in the regulation of the stress-axis as well in stress-related behavior. The lack of VP may cause a less anxious-depressive state accompanied by diabetes insipidus. Our aim was to prove that behavioral effect of VP is due to its regulatory role in the central nervous system rather than any peripheral effect. Behavioral differences between wild type (WT) and AVP deficient (KO) male Brattleboro rats were studied. Part of the KO animals was treated by V2-receptor agonist via subcutan osmotic minipump (DDAVP; peripheral effect) to compensate the peripheral lack of VP. Anxiety was studied by the elevated plus maze (EPM) and the marble burying test (MB) while depressive-like changes were followed by the forced swim test (FS). As we expected a significant difference was found between KO deficient and WT animals: KO rats spent more time in the open arm of the EPM, showed less burying behavior in MB test and showed less floating behavior during FS revealing a less anxiety-depressive-like phenotype. The DDAVP treatment compensated the peripheral effects of AVP-deficiency (normalized the water consumption and the body weight) on the other hand the behavior of DDAVP treated animals was similar to untreated KO rats in all studied tests. Our data confirmed the role of AVP in the development of affective disorders. We demonstrated that the effect is due to the central rather than peripheral role of AVP.