

The atypical antipsychotic drug amisulpride. Secretory effects on rat salivary glands observed by HRSEM

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The atypical antipsychotic drug clozapine, used in the treatment of schizophrenia, induces sialorrhea, that is reported to be abolished by amisulpride (1), a dopamine and serotonin antagonist. Preclinical studies show, however, amisulpride to be without inhibitory effect on the clozapine-evoked salivary flow in rats. Unexpectedly, amisulpride, without evoking any secretion per se did, instead, enhance the salivary response to both nerve stimulation and autonomic drugs by unknown mechanisms. The aim of this study is to observe, by high resolution scanning electron microscopy (HRSEM), the morphological effects of amisulpride on serous cells of submandibular and parotid glands *in vivo* and *in vitro*. Rats were intravenously given amisulpride (2), glandular tissue was removed, fixed for electron microscopy, and subjected to our variant of the OsO₄ maceration method (3); some specimens exposed *in vitro* (4) to the drug, were also included. In order to observe the morphological changes on the plasmalemma involved in secretory processes, we shook slices during maceration time removing all cytoplasmic organelles. In HRSEM images, on the cytoplasmic side of intercellular canaliculi, we calculated the density of microvilli, microbuds, and protrusions per μm^2 of luminal membrane (4). Our morphological images and morphometrical data showed differences between control and treated specimens: in particular, in the canaliculi of both types of glands the density of protrusions, related to docked-granules, was increased. We conclude that amisulpride per se initiates secretory activity in the glands. This activity may be the pre-requisite for the potentiating effect of amisulpride.

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References

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Key words

Amisulpride, salivary glands, scanning electron microscopy, morphology.