

PLANT POLYSACCHARIDES ACTIVATE IONIC CHANNELS OF NEURONS

Vislobokov A.I., Prosheva V.I.¹

The Saint-Petersburg State Medical University of I.P.Pavlov, 197022, Russian Federation,
Saint-Petersburg, 6/8, Leo Tolstoy Str.

¹Institute of Physiology, Komi Sci.Center, Urals Branch of the Russian Academy of Sciences,
167982, Russian Federation, Syktyvkar, 50 Pervomayskaya Str.

Tel.: (8821)44-78-90, Fax: (8821)44-78-90,

E-mail: V.Prosheva@physiol.komisc.ru

Polysaccharides are a part of composition of all plant cells wall and an important component of food of animals and man. At present data concerning membranotropic properties of polysaccharides are limited although this information is necessary for elucidation of mechanisms of their physiological and pharmacological activity. In the given paper the attempt was undertaken to compare effects of polysaccharides from tansy, *Tanacetum vulgare L.* and campion *Oberna behen (L.)I. (Silene vulgaris (M.) G callus* on ionic channels in the membrane of isolated molluscan *Lymnaea stagnalis* neurons using voltage-clamp technique. Polysaccharides from tansy, *Tanacetum vulgare L.* (pectin named tanacetan) and campion *Oberna behen (L.)I. (Silene vulgaris (M.) G callus* (acid arabinogalactan and pectin named silenan) (applied from outside in 0.1-10.0 µg/ml range concentration) was shown to activate non-selectively outward potassium, inward sodium and calcium ionic currents (they increase currents amplitude by 5-10 % in a weakly concentration-dependent manner and reversibly) and reduce nonspecific membrane leakage currents. It was shown that the kinetics of ionic currents under the polysaccharides action practically does not change; this indicates the absence of interaction of the given substances with the gate mechanisms of ionic channels. The reversibility of studied plant polysaccharides effects testifies about their not strong binding with the structural elements of membrane. The absence of the selectivity of studied polysaccharides action and strict concentration dependence of effects allows to speak about nonspecific activation mechanism of ionic currents by these substances.