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### Membrane Transport of the Zwitterionic Aromatic $\alpha$ -Amino Acids by $\alpha$ -Aminophosphonates

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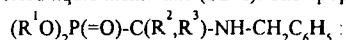
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## Membrane Transport of the Zwitterionic Aromatic $\alpha$ -Amino Acids by $\alpha$ -Aminophosphonates

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Highly selective biological transport of amino acids is usually mediated by carrier proteins. The application of such membrane systems for the analysis and separation of amino acids has long studied. This work is devoted to the transport of zwitterionic form of aromatic  $\alpha$ -amino acids such as d,l-Phe, d,l-DOPA, d,l-His, d,l-Tyr, d,l-Trp, via supported liquid membrane (SLM). The lipophilic  $\alpha$ -aminophosphonates (I):



$R^1$  - amyl or 2-ethylhexyl;  $R^2, R^3$  -  $(CH_2)_4$ -,  $(CH_2)_5$ -,  $CH_3$  &  $CH_3$ ;  $C_6H_5$  &  $H$ ;  $H$  &  $H$ ,

have been used as carrier in the membrane systems composed of a porous polymeric support (Millipore Type FA) impregnated

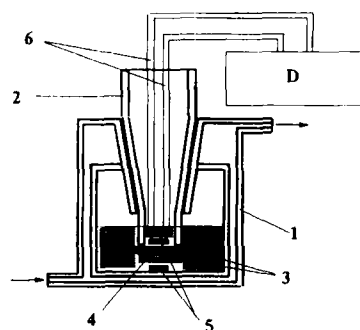


FIGURE 1 Glass thermostated cell for membrane extraction: 1-external thermostated vessel with source phase; 2-internal vessel with receiving phase; 3-ring; 4-supported liquid membrane (SLM); 5-magnetic stir bars; 6-flow-through cell; D-spectrophotometer.

with  $10^{-1}$  M carrier in o-nitrophenyl n-octyl ether (amino acid concentration in source phase is  $10^{-3}$  M). The cell for membrane extractions is presented on Fig. 1.

$\alpha$ -Aminophosphonates can bind both ammonium and carboxylate moieties of amino acids due to interaction with phosphoryl group, nitrogen lone pair or N-H bond. To study mechanism of transfer via membrane the transport of histidine from strongly acidic (pH 3), neutral and strongly alkaline (pH 12) solutions were performed. Adding to the membrane phase carriers (I) doesn't practically influence on transport rate of cationic and anionic forms of amino acid whereas the flux of zwitterionic form via membrane increases approximately tenfold.

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