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 НАУКОВЕ ТОВАРИСТВО ІМЕНІ Т. Г. ШЕВЧЕНКА



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### ПЕРІОДИЧНА СИСТЕМА ХІМІЧНИХ ЕЛЕМЕНТІВ

| ПЕРІОД   | РЯД | Г Р У П П И |    |                 |                 |                  |                 |                 |                 |     |     |    |    |  |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|--|-----|-------------|----|-----------------|-----------------|------------------|-----------------|-----------------|-----------------|-----|-----|----|----|--|--|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| I  | II  | III         | IV | V               | VI              | VII              | VIII            |                 |                 |     |     |    |    |  |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I  | 1   | H           |    |                 |                 |                  |                 |                 |                 |     |     |    |    |  |  |    | He |    |    |    |    |    |    |    |    |    |    |    |    |
| II   | 2   | Li          | Be | B               | C               | N                | O               | F               | Ne              |     |     |    |    |  |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| III  | 3   | Na          | Mg | Al              | Si              | P                | S               | Cl              | Ar              |     |     |    |    |  |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| IV   | 4   | K           | Ca | Sc              | Ti              | V                | Cr              | Mn              | Fe              | Co  | Ni  |    |    |  |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | 5   | Cu          | Zn | Ga              | Ge              | As               | Se              | Br              | Kr              |     |     |    |    |  |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| V  | 6   | Rb          | Sr | Y               | Zr              | Nb               | Mo              | Tc              | Ru              | Rh  | Pd  |    |    |  |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | 7   | Ag          | Cd | In              | Sn              | Sb               | Te              | I               | Xe              |     |     |    |    |  |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| VI   | 8   | Cs          | Ba | La              | Hf              | Ta               | W               | Re              | Os              | Ir  | Pt  |    |    |  |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | 9   | Au          | Hg | Tl              | Pb              | Bi               | Po              | At              | Rn              |     |     |    |    |  |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| VII  | 10  | Fr          | Ra | Ac              | Unq             | Unp              | Unh             | Uns             | Uno             | Uue | Uun |    |    |  |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| ВИЩІ ОКСИДИ  |     | RO          | RO | RO <sub>2</sub> | RO <sub>2</sub> | RO <sub>3</sub>  | RO <sub>3</sub> | RO <sub>3</sub> | RO <sub>4</sub> |     |     |    |    |  |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| ЛЕГНІ ВОДЕНІ СПОЛУКИ   |     |             |    | RH <sub>3</sub> | RH <sub>3</sub> | H <sub>2</sub> R | HR              | HR              |                 |     |     |    |    |  |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| * ЛАНТАНОЇДИ   |     |             |    |                 |                 |                  |                 |                 |                 |     |     |    |    |  |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <table border="1" style="width: 100%; text-align: center;"> <tr> <td>Ce</td><td>Pr</td><td>Nd</td><td>Pm</td><td>Sm</td><td>Eu</td><td>Gd</td><td>Tb</td><td>Dy</td><td>Ho</td><td>Er</td><td>Tm</td><td>Yb</td><td>Lu</td> </tr> </table> |     |             |    |                 |                 |                  |                 |                 |                 |     |     |    |    |  |  | Ce | Pr | Nd | Pm | Sm | Eu | Gd | Tb | Dy | Ho | Er | Tm | Yb | Lu |
| Ce   | Pr  | Nd          | Pm | Sm              | Eu              | Gd               | Tb              | Dy              | Ho              | Er  | Tm  | Yb | Lu |  |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| * АКТИНОЇДИ  |     |             |    |                 |                 |                  |                 |                 |                 |     |     |    |    |  |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <table border="1" style="width: 100%; text-align: center;"> <tr> <td>Th</td><td>Pa</td><td>U</td><td>Np</td><td>Pu</td><td>Am</td><td>Cm</td><td>Bk</td><td>Cf</td><td>Es</td><td>Fm</td><td>Md</td><td>No</td><td>Lr</td> </tr> </table>  |     |             |    |                 |                 |                  |                 |                 |                 |     |     |    |    |  |  | Th | Pa | U  | Np | Pu | Am | Cm | Bk | Cf | Es | Fm | Md | No | Lr |
| Th   | Pa  | U           | Np | Pu              | Am              | Cm               | Bk              | Cf              | Es              | Fm  | Md  | No | Lr |  |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

## A MODERN VIEW ON HYPERKALEMIA'S MANAGEMENT

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**Abstract:** Hyperkalemia poses life threatening outcomes but no proper international accord exist for management strategies of acute or chronic hyperkalemia. However the last decade has seen dramatic changes and discoveries in the prevention and treatment of hyperkalemia. Development of new potassium binders, their efficacy and potency are being studied for the same.

**Aim:** To analyse the current data available on the use of potassium binders in the treatment of both acute and chronic hyperkalemia.

**Materials and methods:** Publications including PubMed, Cochrane library were considered along with Google Scholar databases for the last 5 years.

**Results and discussion:** The study demonstrated that sodium polystyrene sulfonate (SPS) and calcium polystyrene sulfonate (CPS) have dominated the management of hyperkalemia (Dong, L. et al., 2022) over 6 decades after being approved by the United States Food and Drug Administration (FDA) in 1958 because of their long term efficacy but due to their affiliation with gastrointestinal side effects their usage has been insubstantial or limited. Earlier SPS was thought to work effectively for constipation along with sorbitol but later FDA found it to be causing colonic necrosis and increased mortality. CPS was useful in patients with high sodium load but there were cases with increased vascular calcification. So, eventually in 2009, the FDA prohibited their long-term use for hyperkalemia (Carrero J.J. et al., 2023). The shortcomings led to the development of “new generation” potassium binders including - patiromer and sodium-zirconium cyclosilicate (SZC / ZS-9). In clinical studies patiromer was found to be well tolerated and reduced hyperkalemia in patients with diabetes mellitus, chronic kidney disease, heart failure, hypertension to enhance cardiovascular and renal outcomes and also in patients on renin-angiotensin-aldosterone system inhibitors (RAASi) therapy.

Cochrane reviews were conducted three times (2005, 2015, and 2020) for comparison of “old generation” potassium binders with the new generation” potassium binders however, from the point of view of safety, preference was given to the “new generation” potassium binders (Gupta, A. A. et al., 2022).

**Conclusion:** Hyperkaliemia is a serious and challenging clinical issue and potassium binders play an important role in the treatment of acute and chronic hyperkalemia. “New generation” potassium binders are effective and safe drugs with good tolerance that can be used easily to reduce serum potassium. Apart from the treatment of hyperkalemia they might also allow more patients to be started or maintained on guideline-recommended RAASi. So, further clinical trials and investigations should be done for regulatory approval of these drugs effectively.

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