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RESEARCH LETTER

WILEY

The Ukrainian Milk Ladder: Enhancing diet for children with cow's milk allergy

To the Editor,

Cow's milk allergy (CMA) remains a prevalent allergy in children, with estimated prevalence rates ranging from 1.4% to 2.2%. A wide spectrum of IgE-mediated and non-IgE-mediated reactions, as well as dietary restrictions, can significantly compromise the quality of life for children with CMA and their caregivers.[1,2] Although allergen avoidance remains the mainstay of CMA management, many children with CMA can tolerate heat-treated milk products (cookies, cakes, etc.) aiding tolerance development, aligning with the principles of oral immunotherapy.[2–5]

"Milk ladders" refer to gradual reintroduction schemes of cow's milk into the diet, starting with small amounts and intensive heat treatment, gradually increasing the quantity of cow's milk and reducing the degree of heat treatment.[2,6–8] Currently, the most widely used are the 12-step UK iMAP milk ladder[6] and the Canadian milk ladder.[7] Despite the lack of standardization, milk ladder protocols have proven to be practical and widely used by healthcare professionals and caregivers of children with CMA. According to an international survey conducted in 2017, nearly 70% of participating medical professionals utilized a milk ladder in daily clinical practice.[8] Furthermore, milk ladders have shown a favourable safety profile. Cronin et al reported no episodes of anaphylaxis due to the managed introduction of milk in 89 children with IgE-mediated CMA using a milk ladder.[3]

In Ukrainian culture, the issue of reintroducing cow's milk in childhood is particularly important. Historically, milk and dairy products have been significant sources of calcium and protein in the diets of Ukrainian children, both at home and in educational institutions. However, as per national Ukrainian recommendations, children with CMA should be offered plant-based beverages instead of milk. However, non-dairy diets in public schools and kindergartens often lack nutritional balance. Consequently, children with restricted cow's milk intake may find it challenging to maintain a balanced diet. The possibility of reintroducing cow's milk into their diets can significantly reduce the psychological burden on families and allow children to have a more balanced diet, directly influencing their growth and development.

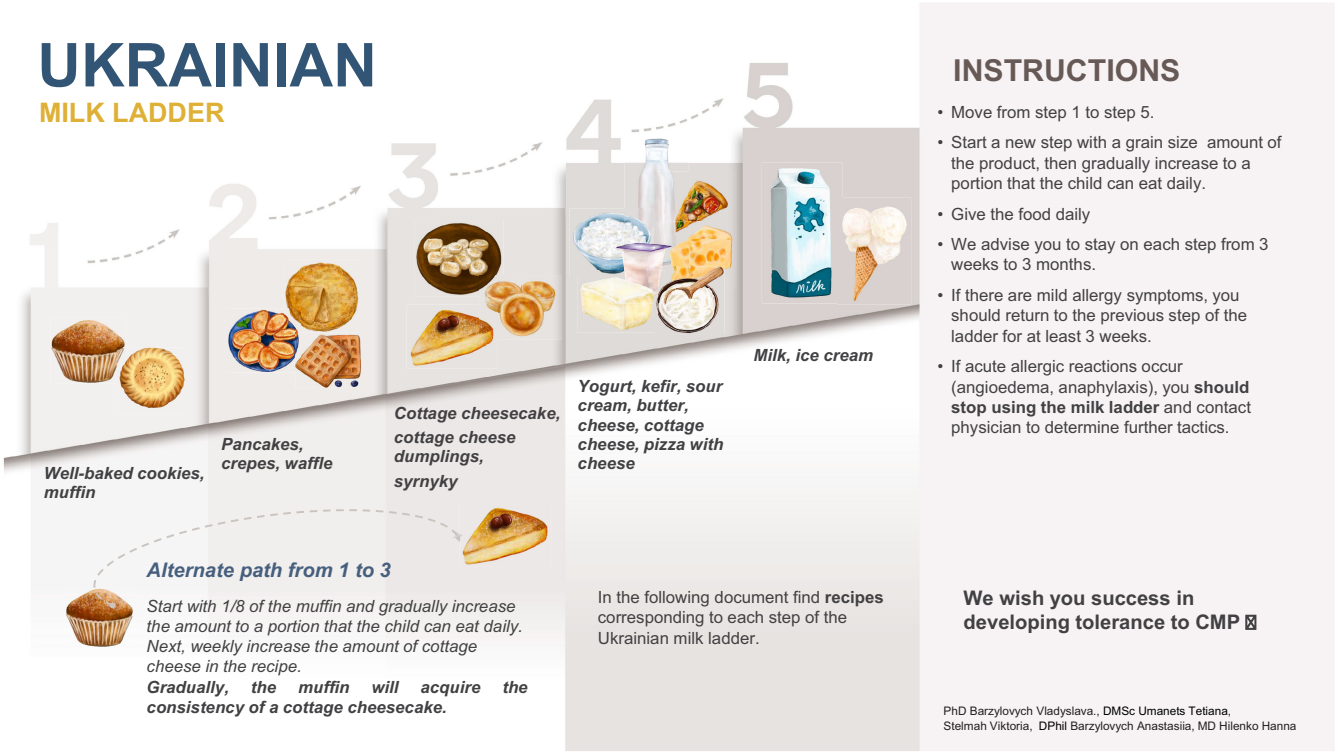

FIGURE 1 Ukrainian Milk Ladder.

The UK and Canadian milk ladders do not align with Ukrainian dietary habits. This group, comprised of leading experts from the largest allergy centres across Ukraine, was established to consider adaptations of the milk ladder to suit Ukrainian cuisine. The final version of the Ukrainian Milk Ladder is outlined in the manuscript. A collection of culinary recipes that correspond to each step of Ukrainian Milk Ladder is available in this repository https://osf.io/ph9zt?view_only=a9c45d817c7443dfba603aae6cd72caf (Figure 1). Ukrainian Milk Ladder consists of 5 "steps," starting with products containing a small amount of cow's milk protein and undergoing intensive thermal processing (step 1), gradually transitioning to a higher amount of cow's milk protein and less thermal processing. There are two options for steps 1–3. The alternative pass allows modifying the recipe without changing the components and just gradually increasing the amount of dairy, transforming it from a cake into a cottage cheese-based food. The alternative path allows children and carers to choose alternative recipes that may be more convenient.

Ukrainian Milk Ladder is complemented by a collection of culinary recipes that correspond to each step of the ladder, taking into account the specificities of Ukrainian national cuisine and widespread public health recommendations for low free sugars intake in children and adults.[9] Alternative options for substituting wheat and eggs, significant additional food allergens, have also been included.

We recommend using the milk ladder at home or in a medical facility for children older than 6 months age who have shown non-IgE-mediated reactions to cow's milk proteins (except for food protein-induced enterocolitis syndrome and eosinophilic oesophagitis) and mild IgE-mediated reactions to cow's milk proteins, after consultation with an allergist. Caregivers should be knowledgeable in recognizing and managing allergic reactions. We recommend that patients be under the care of an allergist, with scheduled consultations at least every 6 months and reporting any acute reactions that may occur.

Contraindications for using the Ukrainian Milk Ladder are the presence of life-threatening allergic reactions (anaphylaxis) in the medical history and poorly controlled bronchial asthma. Relative contraindications include both medical and socio-economic factors, language barriers, cognitive impairments and low physician–family compliance.

We recommend starting the ladder at step 1 and gradually increasing the portion size. Start each new step with a grain size amount of the product, then gradually increase to a portion that the child can eat daily. With good tolerance, we recommend consuming products from each ladder step daily for 3 weeks–3 months before advancing to the next step.

If mild cow's milk-related symptoms occur during the transition to the next step, we advise returning to the previous step for at least 1 month before cautiously attempting to progress again. In the event of moderate/severe acute reactions (angioedema, anaphylaxis) during ladder progression, the use of the milk ladder should be discontinued, and it is important to consult an allergist to determine further management.

Key messages

- Milk ladders are widely used by healthcare professionals and caregivers of children with CMA.
- Ukrainian Milk Ladder is a milk ladder adapted to suit Ukrainian cuisine.

Milk ladder is a practical and widely used tool among healthcare professionals and caregivers of children with CMA. However, despite being developed based on the principles of oral immunotherapy, further improvements regarding standardization and more comprehensive and long-term studies are necessary to determine whether their application indeed promotes the development of sustained tolerance and protects against potential accidental exposure to cow's milk proteins.

AUTHOR CONTRIBUTIONS

Vladyslava Barzylovych, Hanna Hilenko Anastasiia Barzylovych - study conception and design, data collection, analysis and interpretation of results, and manuscript preparation Viktoria Stelmah - development and providing of culinary recipes; Tetiana Umanets, Lesya Besh, Svetlana Nedelskaya, Oleksandr Abaturov, Volodymyr Ditiatkovsky, Hanna Kasianenko, Viktoriia Khomenko, Volodymyr Lapshyn, Yurii Antipkin - data collection, analysis and interpretation of results, providing recommendations based on the specifics of a particular region of Ukraine.

CONFLICT OF INTEREST STATEMENT

No conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that supports the findings of this study are available in the supplementary material of this article.

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