

***Lactobacillus paracasei* supplementation throughout the rat suckling and early post-weaning periods as strain-specific modulators of body growth and antibody response**

Abril-Gil M<sup>1\*</sup>, Marín-Morote L<sup>1</sup>, de Almagro C<sup>2</sup>, Cifuentes-Orjuela G<sup>2</sup>, Moreno Muñoz JA<sup>2</sup>, Rodríguez-Palmero M<sup>2</sup>, Castell M<sup>1</sup>, Pérez-Cano FJ<sup>1</sup>, Franch À<sup>1</sup>

<sup>1</sup>Departament de Bioquímica i Fisiologia, Facultat de Farmàcia i Ciències de l'Alimentació, Universitat de Barcelona (UB), 08028 Barcelona (Spain); Institut de Recerca en Nutrició i Seguretat Alimentària (INSA·UB), Universitat de Barcelona (UB).

<sup>2</sup>Departament de Recerca Bàsica, Laboratorios ORDESA, Barcelona (Spain).

\*Presenting author

***Background and objectives:***

Probiotics are functional foods that can play a beneficial role in the immune system. Early infancy is a critical period for immune development, and therefore it could be an interesting model to apply probiotics. The aim of this study was to ascertain whether the supplementation of two strains of *Lactobacillus paracasei* in early life influence morphometric and immune variables.

***Methodology:***

For this purpose, Wistar rats were daily supplemented by oral gavage with two strains of *L.paracasei* from day 3 to day 28 of life. Body weight (BW) was monitored throughout the study. At days 21 (suckling ending) and 28 (one week post-weaning), spleen, thymus and small intestine were weighted. Plasma and intestinal immunoglobulin concentrations were determined at day 28.

***Results and conclusions:***

A strain of *L.paracasei* increased BW in the last week of suckling and also the relative splenic weight at day 21. However, the supplementation with the other strain did not affect BW but increased the relative weight of the small intestine at day 28. Both probiotics demonstrated a differential strain-specific effect in the immunoglobulins' concentrations: a strain was able to enhance both intestinal and plasma IgA levels whereas the other strain reduced the intestinal IgM content.

These results demonstrate that the supplementation with *Lactobacillus paracasei* throughout rat suckling and early post-weaning periods can promote the growth and development of some

lymphoid tissues as well as modulate antibody response. However, it must be taken into account that these effects depend on the particular *L.paracasei* strain.

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