

Scientific Research Process

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Title: Intestinal precocious maturation can be induced in T-cell deficient athymic neonatal rats

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Published studies indicated the gut maturation process to be dependent on T-cells in newborn rats. The studies were performed in conventional rats of the Sprague-dawley strain, together with the experimental tool of induced precocious maturation by enteral exposure to the lectin phytohaemagglutinin and protease. Thus, this study scientific question was if gut maturation could also be induced in athymic (nude) rats, and thus in absence of thymus-derived T-cells.

The study was funded by research grants from the Royal Physiographic Society in Lund (Sweden) and Director Albert Pahlssons Foundation in Malmö (Sweden). Athymic (nude) adult rats were purchased and established a small colony in the departmental animal facility where the studies were performed in athymic (nude) neonatal rats bred in house. Due to difficulties in vitality and thriving of the nude offspring, the researchers decided to use cross-fostering of nude rat pups with conventional dams for the obtention of better experimental group numbers. Phytohaemagglutinin or protease were administered orally at 14 days of age or on day 14, 15 and 16 repeatedly, and at last, samples were collected on postnatal day 17. Using the experimental design as in the previous studies in conventional rats.

All experiments were performed and data was collected and analysed by the authors. Body and organ weights were collected during sample collection, intestinal tissue was collected and processed for paraffin embedding and histology and immunohistochemistry. Previously established maturational parameters were analyzed and the results showed that phytohaemagglutinin and protease could indeed induce precocious gut maturation in athymic rats.

The novelty of the study relies on the finding that gut maturation can be induced in athymic rats despite the T-cell deficiency and the hypothesis that gut maturation depends on T-cells. Furthermore, some T-cells could be found

in the intestinal mucosa, indicating the possibility of the athymic animals to have compensatory mechanisms for thymus deficiency and the development of extra-thymic T-cells.

Sincerely,

A handwritten signature in black ink, consisting of a large, stylized 'E' followed by 'A' and 'S' in a cursive script.

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