SARCOGLYCAN SUB-COMPLEX, SATELLITE CELLS AND EXTRACELLULAR MATRIX PROTEINS IN MASSETER MUSCLE AFFECTED BY UNILATERAL POSTERIOR CROSSBITE

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Unilateral posterior crossbite disease is defined as any abnormal buccal-lingual relation between opposing molars, premolars, or both in centric occlusion. It is one of the most prevalent malocclusions in the primary and early mixed dentition and is reported to occur in 8% to 22% of the cases. The most common form is a unilateral presentation with a functional shift of the mandible toward the crossbite side, resulting in an increased frequency of reverse chewing cycles. Moreover, the masseter of the affected side results less active than the counterpart[1]. Our previous immunofluorescence study on masseter muscle of patients affected by crossbite has shown that in the affected side there is a lower expression of muscle specific integrins than the counterpart[2], demonstrating that integrins could be correlated with contraction activity in mastication, maybe promoting the production of new muscle fibers. Then, considering the existence of a known bidirectional signaling between integrins and sarcoglycans and considering that changes in masticatory musculature may be in relationship with developmental factors and remodeling processes of muscle fibers and connective tissue, here we performed an immunofluorescence analysis using antibodies against sarcoglycans, against Pax-7, in order to study the satellite cells, and against Myf5, MyoD to study myogenic differentiation; moreover, we performed immunofluorescence reactions using fibronectin, collagen type I, III, IV and laminin in order to study the behaviour of extracellular matrix during the crossbite condition. Our results have shown that the staining pattern of tested proteins for extracellular matrix increased in crossbite side whereas the staining pattern of sarcoglycans, Myf5, MyoD and Pax-7 decreased. In side non-affected by crossbite it was shown a lower staining pattern of extracellular matrix proteins and an increased sarcoglycans, Myf5, MyoD and Pax-7 positive cells. In our opinion, the increase of sarcoglycans, Myf5, MyoD and Pax-7 in side non-affected by crossbite, could be due to high workload of healthy muscle with a consequent hypertrophic response of muscle fibers leading to increased turnover of extracellular matrix slightly represented. Contrarily, the increase of extracellular matrix proteins in crossbite side could be important for remodeling and healing processes in malocclusion diseases.

References

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STUDY OF THE MIXTURE EFFECTS OF FLUCONAZOLE AND ETHANOL BY USING *CIONA INTESTINALIS* AS A NEW ALTERNATIVE TERATOLOGICAL MODEL

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The aim of the present work is to evaluate the effects of the co-exposure to sub-teratogenic levels of ethanol (Eth) and to the clinically used antimycotic fluconazole (FLUCO) by using a new alternative model for teratological screening: *Ciona intestinalis*. The simple development of ascidians (Chordata, Tunicata) and their key phylogenetic position within the sister group of Vertebrates, suggests the ascidian model as a potential good alternative experimental system for teratological purposes. *C. intestinalis* embryos were exposed to FLUCO (31.5-62.5-125-250-500 μM), to Eth at its not effect level (0.1%) or to the mixture of FLUCO and Eth from 2-cell to the larval stage. At the end of the colture period, larvae were morphologically examined. Eth alone was unable to affect embryo development. Larvae exposed to FLUCO showed a typical phenotype characterized by malformations at the trunk region comparable to those elicited by retinoic acid (RA). The effects were FLUCO concentration-related. Interestingly, a significant increase of larvae with severe malformations was observed in groups co-exposed to FLUCO and Eth: the larvae showed a severely affected phenotype characterized by absence of sensory vesicle cavity, by absence of pigment in the sensory organs and presence of a short, curled tail. The anterior end was round in shape, the palps were not elongated, and larvae failed the hatching. The obtained data point the attention to the teratogenic risk of co-exposure to FLUCO and Eth. The results are comparable to those previously obtained in postimplantation rat embryo cultured *in vitro* and could be related to RA increase. Considering that FLUCO and Eth do not share the same mode of action (MOA), our data support the need of a cumulative risk assessment not only for chemicals grouped on the base of similarities in chemical structure but also for chemicals differently acting on the same biological pathway. The evidence that different subphyla (Tunicates and Vertebrates) are susceptible to azole fungicides and that the observed effects are quite similar, suggests the hypothesis that these molecules alter the expression of ancestral conservative genes, starter of a cascades of events, which model the whole embryonic body plan. Finally, ascidian embryo seems to be a good experimental system for a comparative screening of the teratogenic potential of azole fungicide mixtures, pointing the attention to a possible environmental impact of azole fungicides.

FIBROTIC AND VASCULAR REMODELLING OF COLONIC WALL IN EXPERIMENTAL COLITIS

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Inflammatory bowel diseases progress often towards fibrosis of intestinal wall, which might account for abdominal pain and dysfunctions of intestinal transit. Of note, despite the relevance