Serotonin and Substance P in the Gastric Cardiac Region of the Rat

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ABSTRACT

The role of serotonin and substance P in the regulation of gastric motor function was investigated in the rat. The effects of isolated strips of the oxyntic muscle and the gastric fundus were studied. Serotonin and substance P were found to induce a relaxation of the oxyntic muscle and a contractile response in the gastric fundus. The relaxant effect of serotonin was blocked by the addition of 6-hydroxydopamine, while the contractile effect of substance P was blocked by the addition of atropine. The results of these experiments suggest that serotonin and substance P play a role in the regulation of gastric motor function in the rat.
Fig 3. Equipment used for studies of mucus flow rate. Mucus flow was counted by a stop watch and analysis using the video motion analyser.

Fig 4. Mucus flow pattern and flow rate in nasal passage of normal rats. The arrow indicated the direction and rate of mucus flow. The open arrow indicated the direction of clearance of this area onto the nasal septum. The broken lines indicated the division of the respiratory epithelium with the squamous epithelium (anterior line), and the olfactory epithelium (posterior line). Large arrow = 0.5-12 mm/min; intermediate arrow = 5 mm/min; small arrow = 1-5 mm/min; large arrow head = 0-2 mm/min; small arrow head = 0.5-5 mm/min.
讨论

总体情况显示研究呼吸道粘液纤毛功能，很难观察其内部的变化，总体情况下又很难保持时间尺度，需依赖电影的显微镜方法，但需用于研究鼠类的实验，近年采用使用录像方法研究鸡的气管粘膜，我们创造了一种具有夹层的观察窗，以保证气管的湿润。通过气流和装置保持湿润，研究了呼吸道粘液和纤毛细胞的粘液流动方式，提出正常和异常情况下呼吸道粘液流的粘膜和纤毛功能的改变。

鼻腔粘液流动方式有少量报道，本文描述了鼻腔各个不同部位粘液流动的方式和速度，大部分区域的粘液流与吸入空气流是逆向流动，似乎起着清除吸入气的作用。

我们研究，纤毛粘液流动是一个连续的覆盖于粘膜表面的物质，粘液纤维在屏障的作用下，虽然在吸入气道的粘液流中存在，但粘液流动现象仅限于气道上皮细胞外，在非纤毛上皮细胞区域，有动作用的粘液流动现象，这可能是由于受到邻近粘液流的牵引作用，或者原因所致，这些表明粘液层具有粘附性粘的特征，已证实粘液在吸入上皮的粘液流动可以清除吸入的尘埃。

甲基纤维素和人纤维粘液纤毛功能的抑制性影响已有报道，但没有二甲基亚砜和氯化钠对鼻粘液纤毛功能影响的资料，我们看到这三种生理盐水对呼吸道纤毛功能影响有显著的抑制作用，表现为纤毛损伤，这可能与气流对纤毛损伤的力学分布有关。

用上述方法制备的，鼻咽吸入 9 ppm 甲苯 4 周后，鼻粘液流粘连功能有明显改
A PROCEDURE FOR STUDY OF EFFECTS OF IRRITANT GASES ON NASAL MUCOCILIARY APPARATUS OF RATS

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ABSTRACT In normal rats the mucous flow rates varied considerably from one area to another, but were fairly consistent between animals for each area. The flow rates ranged from 1 to 30 mm/min in different areas. Rats were exposed to formaldehyde (15 parts), dimethylamine (175 ppm) and chlorine (2.5 ppm) for 4 h/d x d. The gases inhibited mucociliary function with mucostasis being more variable in extent than ciliostasis. The distributions of areas of ciliostasis and mucostasis were generally similar but not identical for each gas. With all 3 gases, the dorso surface of the nose were unaffected. Conclusion. This procedure provides useful informations on the effects of irritant gases on rat's nasal mucociliary apparatus and helps to elucidate the mechanisms responsible for nasal toxicity.

KEY WORDS nasal mucosa; cilia; rats; dimethylamine; chlorine; formaldehyde