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Interaction of L-Arginine/Nitric Oxide system with Lead Acetate on secretion of Amylase from isolated rat parotid glands

Abdollahi M, Zadehkabir R, Rahmat Jirdeh N, Dehpour AR

Abstract:

In the present study the effects of lead acetate and/or L-Arginine as a nitric oxide precursor and L-NAME as a nitric oxide synthase inhibitor on the amylase secretion of rat parotid gland lobules were investigated. Lead acetate in doses of 3, 30 and 300 µM significantly (P<0.01) caused a dose-dependent reduction in isoproterenol-stimulated or non-stimulated amylase secretion. When secretion of saliva was not stimulated by beta-adrenergic agonist, L-Arginine (100 µM) significantly (P<0.01) reduced amylase output. L-NAME (100 µM) alone had no significant effect on amylase output but when used with lead acetate prevented (P<0.01) from lead-induced reduction of amylase output. Both L-NAME (100 µM) and L-Arginine (100 µM)) when used alone reduced isoproterenol-stimulated amylase output. Concurrent administration of lead acetate (300 µM)) with either L-Arginine (100 µM) or L-NAME (100 µM) showed a marked positive interaction in reducing the isoproterenol-stimulated secretion of amylase. These findings suggest that nitric oxide plays a role in secretion of amylase from parotid. Different affinity of lead acetate to interact with different nitric oxide synthases might be a reason for different effects on parotid amylase secretion observed in the presence or absence of secretion stimulant.

Keywords:

Parotid ، Amylase ، L-NAME

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