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Abstracts
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Preface

In this abstract book you will find the abstracts as submitted to the Organizing Committee of the First Congress of the Federation of European Physiological Societies (FEPS). No selection was made regarding the scientific quality of the abstracts. All abstracts have been reproduced without editorial modifications. Some abstracts were retyped for better reproduction.

The decision to accept the abstracts as submitted was made by the Organizing Committee and the Executive Committee of FEPS to fulfill one of the main aims of FEPS, that is, to stimulate the collaboration and exchange of ideas between physiologists in Europe. Therefore, we have also decided to publish the abstracts of our colleagues from Central and Eastern Europe, who were not able to attend the meeting for financial reasons.



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GASTRIC RELATED NEURONS IN THE INSULAR CORTEX OF THE RAT. V.Aleksandrov, V.Bagaev and S.Panteleev.

This study was carried out to investigate the location peculiarities of the insular cortex neurones sending axons to the "gastric" region of dorsal vagal complex and the action the electric stimulation of these ones to motor gastric activity.

HRP solution was injected under visual control into the right or into the left dorsomedial subdivision of the middle portion of nucleus tractus solitarius. Labelled pyramidal neurons were observed in the V layer of the agranular and disgranular insular cortex bilaterally. Their ratio was 3:1 in the contra- and ipsilateral cortex respectively. The main part of labelled ipsi- and contralateral insular neurones (96% and 89%) was located between 0.0 and + 1.05 mm with respect to the joining of anterior commissure. An electrical stimulation of the identified insular cortex area induced both antral tone changes and increasing of an amplitude of antral contractions. The heart rate and breathing rate were unchanged under the same conditions.

The results of present study confirm that insular cortex contains the specific direct output to the bulbar gastric centre.

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HYPOXIA STIMULATES AN APPEARANCE OF NEW β -CELLS IN INTACT AND STZ-DIABETIC WISTAR RATS. Yu.Kolesnik, A.Abramov

We studied the functional state of neurosecretory nuclei of hypothalamus and islets of Langerhans with different effort of glucose metabolism. The object of experiment was Wistar rats with STZ-diabetes, intact and diabetic rats which due to many days adapted to hypoxic hypoxia. In STZ-diabetic rats the destruction of β -cells with decreasing concentration of insulin (I) in them and blood was observed. In acinary part of the pancreas single I-immunoreactive cells were observed. In the paraventricular nuclei of hypothalamus (PVH) hypertrophy and increases of RNA contents in vasopressin (AVP), oxytocin (OT), somatostatin and CRF synthesizing neurons was seen. Hypoxic treatment (HT) of intact rats stimulated synthesis and secretion of I in β -cells. In acinary part of the pancreas single I-immunopositive cells were observed too. Number of these cells was quite more than one in STZ-diabetic rats. HT of STZ-treated rats inhibited destruction of β -cells, and increased concentration of I in β -cells and blood. In diabetic rats HT stimulated appearance of big number of new I-immunopositive cells in acinary pancreas. In the PVH it was notice decreasing of the functional activity of AVP synthesizing neurons, and increasing activity of CRF and OT synthesized neurons. Think that the stabilisation of glucose homeostasis in rats with I-dependent diabetes under the HT is related with regulatory effects of the hypothalamic neuropeptides on the functional activity of endocrine pancreas, and direct regulatory effects on glucose and fats metabolism.

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GASTRIC SECRETION AT DIFFERENT PATTERNS OF VAGUS NERVE STIMULATION. V.A.Zolotarev, R.P.Hropycheva and S.A.Polenov.

It is clear that not only the total number of nerve impulses but also their bursting pattern may influence the effector responses. The aim of this study was to elucidate the role of the vagal nerve impulse pattern in determining gastric secretory responses. **Methods:** In nembutal-anaesthetized male Wistar rats, intragastric perfusion (0.6 ml/min) with saline and continuous monitoring of pH and pCO_2 of the effluent were used for estimation of gastric acid and bicarbonate production. Pepsinogen secretion was estimated in samples of effluent. Left subdiaphragmatic vagal trunk was stimulated for 80 min at 6V and 2mc both continuously (10 Hz) and in 1s bursts (50Hz) at 4s intervals, delivering the same total number of impulses in randomized manner. **Results:** The continuous vagus stimulation produced an enhancement of acid secretion from $0,23 \pm 0,06$ mM/min (basal level) to $5,26 \pm 1,20$ mM/min (max.value). Burst stimulation caused a significantly smaller increase in acid production ($1,92 \pm 0,51$ mM/min both in sympathectomized and intact stomach). Bicarbonate production also increased during the continuous stimulation from $0,13 \pm 0,02$ mM/min to $0,38 \pm 0,12$ mM/min. Burst stimulation produced less pronounced secretory response especially in the stomach with preserved sympathetic innervation, when no significant changes in bicarbonate production were recorded. Pepsinogen production enhanced to vagus nerve stimulation being not different at either pattern of stimulation used. **Conclusions:** Continuous rather than burst vagal nerve stimulation is the effective mean of neural control of gastric acid and bicarbonate secretion. (Supported by ISF grant R4Q000).

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COMPERATIVE CHARACTERISTIC OF BIOELECTRICAL IMPEDANCE LINGUAL AND CORPORAL ACUPOINTS TO DECEIT CHANGES GASTRIC SECRETION.

O. S. Zayachivsky, O. V. Shulyak, O. G. Mysakovets, O. I. Antoniv, Y. S. Petrushyn, O. N. Kulyk

The purpose of this study was to compare the estimates of bioelectrical impedance analysis (BIA) lingual acupoints (LAP) and corporal acupoints (CAP) in patients with differing secretory function on the background of chronic gastritis (GCH) to define the mechanism of afferent and efferent ways of influencing the visceral functions. The experimental impedancometry (resistance and reactance measurements were made by using a four-terminal bioimpedance analyzer (ICGT-01, REMA, Lviv, Ukraine) on 112 patients with GCH with hypo-, normal, hypersecretory function of the stomach, reference group being of 45 patients. Analysis of the data obtained, BIA, LAP, CAP showed the reduction of impedance module at hyperacid secretion due to the active component ($P < 0.01$). Unidirectional changes have been detected in BIA, LAP, CAP at hypo-, and normosecretory function of the stomach depending on the age of the patients and the length of their sickness. Taking into account the combined mechanisms of regulation of LAP, CAP, correlation of BIA data and intensity of secretory process, the method BIA can be applied for the investigation of the first link of the chain of the reflex arc (biological activity acupoints - LAP and CAP - as receptor fields).

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