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BRIEF REPORT

Radioimmunoassay-detected basal level of epidermal growth factor in gastric juice of 86 healthy Chinese volunteers

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INTRODUCTION

Epidermal growth factor (EGF) is a low molecular weight polypeptide consisting of 53 amino acid residues[1]. EGF is primarily produced by the submaxillary glands and Brunner's glands, but its distribution pattern spans the gastrointestinal tract with a particularly high concentration in gastric juice. To date, however, the precise quantitative value of EGF in gastric juice of healthy subjects has not been reported for a study cohort of Chinese. In the study presented herein, we used radioimmunoassay (RIA) to measure the basal level of EGF in 86 healthy Chinese volunteers of various age.

MATERIALS AND METHODS

Subjects

Eighty-six healthy volunteers, including 24 children (male/female, 18/6; age range: 8-9 years) 28 young adults (male/female, 16/12; age range: 18-20 years) and 34 adults over the age of 40 (male/female, 20/14).

Methods

Special capsules designed for collecting minute quantities of gastric juice were swallowed by each of the 86 subjects under basal condition (*i.e.* before 8 am in the morning, representing the fasting state). After 20 min in the stomach, the capsules were manually extracted; the volume of gastric juice in each ranged from 0.3 mL to 0.5 mL. Each specimen was preserved individually by freezing at -40 ℃ until use. In preparation for measurement and analysis, the specimen was centrifuged at 2000 r for 30 min at 4 ℃. A total of 0.1 mL of the resulting supernatant was used to measure EGF by RIA, according to the method described by Lu *et al*[2].

RESULTS

The average EGF concentration in the gastric juice of the 86 healthy volunteers under basal condition was 0.62 ± 0.15 μg/L. The values of EGF by age group were as follows: Children, 0.61 ± 0.14 μg/L; young adults, 0.65 ± 0.14 μg/L; older adults, 0.59 ± 0.13 μg/L. The EGF level among males in the study (n = 52) was 0.61 ± 0.14 μg/L and among females was 0.62 ± 0.15 μg/L. No statistically significant differences were noted between the different age and sex groups.

DISCUSSION

The primary sources of EGF are the submaxillary glands and Brunner's glands of the duodenum. It is believed that EGF can inhibit secretion of gastric acid and stimulate DNA synthesis, and that it plays a role in protection of gastrointestinal mucosa[3]. Although, EGF is known to be of higher concentration in the gastric juice, the exact concentration of EGF in normal gastric juice had not yet been defined, partially due to the inconvenience of collecting specimens. Conventional gastric tubing and gastroscopy causes discomfort, but the newly developed capsule (taken orally) can more easily obtain minute specimens of gastric juice from both children and adults. These capsules are a promising innovation for research science since EGF level might be an important variable in evaluating health status. The study described herein indicates that the capsules will be useful for future investigations into various benign and malignant diseases of the gastrointestinal tract.

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