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Gastritis, Gastropathy and Gastroprotection: What is Common and what are the Differences

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ABSTRACT

In the numerous publications available, there are very contradictory provisions on the relationship between chronic gastritis and gastropathy. The natural history and clinical significance of gastroduodenal erosions depend on aetiologia and need further clarification. In the International Statistical Classification of Diseases and Related Health Problems (ICD-11) gastric erosion is subordinate to the section gastric ulcer, and there is no erosive gastritis as a nosologically form. In classification, ICD-11 indicates the following: gastropathy NOS. The letters NOS are an abbreviation for the term 'not otherwise specified', implying that the documentation that is used for classifying does not provide more detail beyond the term provided. It implies 'unspecified', 'incompletely specified' or 'unqualified'. There is heterogeneity in the definitions of gastritis types, and gastropathy in the literature, which has led to confusion in clinical practice and research. The clinically important part is emphasized: "gastric cytoprotection = gastroprotection" is the prevention of chemically induced hemorrhagic erosions of the stomach, by substances other than those have an inhibitory effect on gastric acid secretion, while preservation of microcirculation and gastric mucosa mucin barrier are a key's element.

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Acronyms and Abbreviations

International Statistical Classification of Diseases and Related Health Problems -ICD-11 and ICD-10.

Term 'not otherwise specified' ('unspecified'), 'incompletely specified' or 'unqualified') -NOS.

NHS: National Health Service, NSAID: Non-steroidal anti-inflammatory drugs, WHO: World Health Organization, OTC: Over-the-counter medicines, NIG: NSAID-induced gastropathy, PG: Prostaglandins, PL: Phospholipids, SH: Sulfhydryls, NO: Nitric oxide, ATC: Anatomical Therapeutic Chemical Classification, CGNC: Conifer Green Needle Complex, DCNE: Dense Conifer Needle Extract, FTS: Fitesten®, sIgA: Secretory immunoglobulin A.

Introduction

The stomach mucosa is directly related to each of the three locations listed in the title. It is important to note that in the past ten years, tremendous progress has been achieved in describing pathophysiological processes in the mucosa in general and the gastric mucosa in particular. The mucosa of the digestive tract has a special ability to resist injury. At the same time, a severe inflammatory response to erosions and ulcers causes a variety of damage to the mucosa. It has been demonstrated that, after an hour, damage to the mucosa in the presence of a sufficient amount of protection results in a chain reaction of the mucosa. The production of fully developed mucins (glycoproteins), the composition, and characteristics of the mucous barrier components on the surface of epithelial cells are recognized as some of the most crucial protective factors in these cytoprotective processes. Mucin, which is composed of glycoproteins, creates the mucous membrane. For any area of the gastrointestinal tract's mucosa, the mechanism by which glycoproteins protect the mucosa is essential, and it plays a crucial role in the development of pathological reactions in a number of illnesses, including drug-induced gastritis and gastropathy, esophagitis and gastroesophageal reflux disease, as well as erosive and ulcerative lesions of the gastric mucosa. Additionally, it is used to screen for intestinal diseases, gauge their severity, assess the efficacy of ongoing treatment, clarify the potential impact of exogenous factors on the progression of a number of diseases, including nutritional factors, and assess the extent to which impaired permeability contributes to the pathological processes that underlie various systemic diseases. Food allergies, acute and chronic liver conditions, inflammatory bowel diseases, ankylosing spondylitis, diabetes mellitus, scleroderma, rheumatoid arthritis, sarcoidosis, bronchial asthma, viral infections, etc. have all been linked to a violation of the permeability of the gastrointestinal mucosa. However, a number of issues and questions still exist, along with both old and new pathophysiological discoveries, which pose substantial difficulties in clinical practice. The following should be noted as the principal problematic positions: Contradictions

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in the definitions of chronic gastritis and gastropathy, as well as international unified guidelines on the connection between symptoms of gastritis and dyspepsia, are the first and second issues. 3. Ignoring theories on gastroprotection that are supported by data. Making a decision in such a circumstance is referred to as decision-making under ambiguity in decision theory. How doctors respond when faced with uncertainty. The first choice is when we respond or make a decision quickly (insight): we do not have to stop and ponder; we make a decision based solely on what we observe. We frequently replace an existing issue with a problem that is identical to one we have already resolved. In other words, we draw on our prior knowledge to solve a new problem using an analogy to an old one. This option is associated with certain errors, and irrationality in decision-making. The second option for a specific solution to the problem is associated with the search for a range of possible solutions based on existing knowledge and the cost of cognitive efforts.

Controversies and Uncertainties in Gastritis, Gastropathy and Gastroprotection

Chronic gastritis and gastropathy concepts contradictions in the definition

Gastritis is defined as "inflammation of the lining of the stomach" [1], "inflammation of the stomach, esp. of the stomach lining" [2], and "a painful condition in which the interior surface of the stomach becomes inflamed" [3] in general reference books and encyclopedias. The stomach's lining can become inflamed, irritated, or even eroded [4]. When your stomach lining becomes red and bloated (inflamed), you have gastroenteritis [5]. According to Cleveland Clinic, gastritis is a condition that causes stomach pain, indigestion. In according to the Mayo Clinic, the term "gastritis" is a collective name for a number of ailments that all include inflammation of the stomach lining. The National Health Service (NHS) in England defines gastritis as an inflammation of the stomach's lining due to irritation. Inflammation of the stomach lining is the most common symptom of gastritis, however the term is also frequently used to describe other symptoms, such as burning or discomfort [6]. Similar definitions can be found in a number of medical reference books, including the Miller-Keane Encyclopedia and Dictionary of Medicine, Nursing, and Allied Health, Seventh Edition, The American Heritage® Medical Dictionary, The Gale Encyclopedia of Medicine, Farlex Partner Medical Dictionary, The American Heritage® Medical Dictionary, McGraw-Hill Concise Dictionary of Modern Medicine, and Medical Dictionary. An evidence of inflammation is frequently included in descriptions of gastritis, but inflammation can vary in degree, duration, and other aspects. Innate immune receptors that recognize and detect infection, host damage, and danger signaling molecules activate a highly regulated network of immunological and physiological events in order to maintain homeostasis and restore functionality. Inflammation is the most common manifestation of host defense in response to changes in tissue homeostasis [7]. The kind of trigger that is identified by the innate immune receptors determines the potency, length, and effects of an inflammatory response. In addition, there are various phenotypes of inflammation due to various stimuli. Physiological inflammation is the homeostatic balance between tolerance of the microbiota and the reactivity to pathogen invasion [8]. Pathologic inflammation is typically an immediate reaction to the host's response to toxins and infection, which frequently results in collateral tissue damage and higher metabolic energy consumption. Chronic low-grade inflammation caused by excessive nutrition consumption is known as metabolic inflammation. By combining signals from the immunological and metabolic systems, metabolic surplus promotes metabolic dysfunction. Gastritis is an inflammation of the stomach lining rather than the stomach itself. Since the stomach has three layers of smooth muscle and an outer serosal layer, the inner mucosal layer is where most pathology arises. This might be as a result of the gastric mucosa's (luminal surface) exposure to various irritants and microbes. The diagnosis of chronic gastritis, which is characterized by a long-term inflammation as well as a change in the epithelium's structure of the gastric mucosa, is crucial for describing inflammation in gastritis. Additionally, as there is no such nosological type in the official categorization of gastritis, the designation of erosive gastritis lacks any foundation. There are a lot of inconsistent statements about the connection between chronic gastritis and gastropathy in the numerous publications that are available. The stomach division is therefore separated into three categories: inflammation, gastropathy, and neoplasia and other disorders, according to the book "Shackelford's Surgery of the Alimentary Tract (Seventh Edition)". Literally translated as "disease of the stomach," gastropathy includes vascular lesions. As previously indicated, certain acute gastritis are actually gastropathies. Topical irritants, such as nonsteroidal anti-inflammatory medications, can cause erosive gastritis [9]. However, another book (Pathobiology of Human Disease) states that: "The microscopic results are generally split into gastropathy, where the inflammation is either absent or limited, and gastritis, where the mucosal alteration incorporates some degree of inflammation (acute and/or chronic). It is fairly uncommon for the etiologic pathways causing gastropathy or gastritis to coincide, and it is not always “possible to separate these two types of conditions readily” [10]. The authors of a 2013 article [11] on chronic gastritis rightly stated that there are now numerous outstanding problems regarding various kinds of gastritis and that pathologists still need to produce descriptive histology reports of 'chronic non-specific gastritis'. The following list of several unknowns demonstrated the need for international consensus on gastritis, particularly its chronic form.

Gastritis Global International Classification

A global consensus for gastritis was developed for the first time in the Kyoto Global Consensus Meeting [12]. The experts noted that the current gastritis classification in the International Statistical Classification of Diseases and Related Health Problems (ICD-10) needs to be revised and proposed a new classification. The experts, with 100% agreement, answered positively to the question: Is the proposed ICD-11 classification for gastritis appropriate? In 2018, the ICD-11 classification was approved by WHO and proposed for implementation. Thus, there is an international standard in which there is a clear gastritis definition: DA42 Gastritis, ‘Gastritis is an injury of gastric mucosa involves epithelial damage, mucosal inflammation, and epithelial cell regeneration except any epithelial defect. Gastritis is caused by various factors such as infectious agents, drugs, chemical agents,

autoimmune reaction and the others. Gastritis is diagnosed by histopathologically and/or endoscopically. Gastritis is classified as acute and chronic phase by clinical course'.

In the global Kyoto consensus for gastritis attention should be paid to the experts answer to the question: How should we classify gastric erosions in the context of chronic gastritis? The answer, with 100% agreement, is presented in the following context: Gastric erosions should be reported separately from gastritis. The natural history and clinical significance of gastroduodenal erosions depend on aetiology and need further clarification. Description gastric erosions in ICD-11: Gastric erosion represents a mucosal breach extending up to, but not through, the muscularis mucosa. Gastric erosion may constitute a phase of ulcer development or accompany some forms of gastric ulcer. Moreover, in ICD-11 is stated: All ancestors up to top, 13 Diseases of the digestive system-Diseases of the stomach or the duodenum - Ulcer of stomach or duodenum - DA60 Gastric ulcer - DA60.0 Gastric erosion. Thus, gastric erosion is subordinate to the section gastric ulcer, and there is no erosive gastritis in the ICD-11 classification as a nosologically form.

At the same time, the global Kyoto consensus contains several expert opinions that are important for a practical physician. This concerns the definition of the concept of erosion and the fundamental position for the diagnosis of gastritis. Gastric erosions are defined as superficial mucosal breaks with a diameter of <3 mm or <5 mm. This small size makes it less likely to confound erosions with peptic ulcers which, by definition, penetrate the muscularis mucosae. Gastric erosions can be detected in the context of *H. pylori* infection but are more frequently caused by intake of mucosal damaging drugs-in particular, aspirin and non-steroidal anti-inflammatory drugs (NSAIDs). Statement 12 - Atrophic mucosa and intestinal metaplasia can be accurately detected by image-enhanced endoscopy, after appropriate training. Really image-enhanced endoscopy has improved the accuracy and reproducibility of endoscopic diagnosis of gastric lesions. This includes chromoendoscopy, high-resolution magnification endoscopy and image-enhanced endoscopy combined with magnification.

Gastropathy variations

The term gastropathy appeared a long time ago, even with the first systematic assessments of intravital endoscopy. So, in the third edition of the book on endoscopic terminology in 1994, the following is indicated: Gastritis – It is histological diagnosis. For some types of diffuse changes of gastric mucosa, the term gastropathy is appropriate (position 3.5.9, page -40). In Appendix 3 presented gastropathy variations – B. Endoscopic classification of gastropathies: Hemorrhagic (3.6, 4.3.1), Aphthous (3.5.9.4), Papulous (Varioliform) (3.8.5/5) Congestive (3.5.7.2.) and Portal Hypertension Gastropathy (3.4.7.2) [13]. During this period, the use of white light endoscopy and proposals for the terminology of gastropathy were logical, before histology, the term gastropathy could be used. Despite the progress in endoscopy with the advent of technologies such as high-definition and high-magnification endoscopes, the situation with differentiated criteria for clearly distinguishing gastritis from gastropathy has not changed. Criteria for reactive gastropathy are based on the 2005 definition, which includes various combinations of foveolar hyperplasia, regenerative changes in the surface epithelium, edema or hyperemia of the lamina propria, erosions and smooth muscle proliferation [14].

In 2022, the term "gastropathy" should be used to denote conditions in which there is epithelial or endothelial damage without inflammation, and "gastritis" should be used to denote conditions in which there is histologic evidence of inflammation. Erosive and hemorrhagic gastropathy typically are diagnosed at endoscopy. Endoscopic findings include subepithelial hemorrhages, petechiae, and erosions. These lesions are superficial, vary in size and number, and may be focal or diffuse. There usually is no significant inflammation on histologic examination [15].

In classification ICD-11 indicates the following: gastropathy NOS and DA42.4 Allergic gastritis (Allergic gastropathy), DA42.76 Hypertrophic gastritis of unknown etiology (hypertrophic gastropathy), DA43.3 Portal hypertensive gastropathy. The letters NOS are an abbreviation for the term 'not otherwise specified', implying that the documentation that is used for classifying does not provide more detail beyond the term provided. It implies 'unspecified', 'incompletely specified' or 'unqualified'. Sometimes an unqualified term is nevertheless classified to a rubric for a more specific type of the condition. This is because, in medical terminology, the most common form of a condition is often known by the generic name of the condition itself and only the less common types are qualified. Recall that, International Classification of Diseases (ICD) is legally mandated health data standard (WHO Constitution and Nomenclature Regulations). ICD serves a broad range of uses globally and provides critical knowledge on the extent, causes and consequences of human disease and death worldwide via data that is reported and coded with the ICD. If the disease state is not clearly indicated in the classification, then problems arise in health recording and statistics on disease in primary, secondary and tertiary care, as well as on cause of death certificates. Designation of gastropathy 'not otherwise specified', despite the presence of publications on the classification of gastropathy in a series of publications including histological assessment [16,17].

Gastric Mucosal Protectants

It should be emphasized a number of significant points from the publications on the gastric mucosa immune response, as the basis for the inflammation formation in gastritis.

Gastritis as a term refers to gastric inflammation, but the cause or causes of gastritis remain poorly understood and the various immune cells, cytokines, and signal pathways effecting in the process of the gastric mucosal immunity have an inseparable relationship with gastric diseases. Pathogen infective-associated gastric diseases, or noninfective-associated gastric diseases, the gastric mucosal immunity plays an important role in the occurrence and development of the disease. However, the gastric mucosal immunity induced by pathogen is a dynamic balance between protective immunity and damage immunity,

by which this specific balance function mechanism needs further study [18]. Thus, it is possible to establish a significant scientific uncertainty in the distinction between gastritis and gastropathy.

There is heterogeneity in the definitions of gastritis types, and gastropathy in the literature, which has led to confusion in clinical practice and research. We performed a clarification study of endoscopic and histological gastroduodenal mucosa changes in Hp- negative and H-positive gastritis in patients with Crohn's disease. Obtained results did not confirm the presence of pathogmonic endoscopic and histological signs for different gastritis [19].

From a pathophysiological point of view gastric mucosal injury can be managed by controlling the balance of two different factors: aggressive (as gastric acid and bile acids) and gastric mucosal protection (defensive). Although most gastric disorders are regarded as 'acid-related diseases', the 'mucosal-protection' factor must also be considered in the occurrence of these disorders. Erosive and ulcerative gastric mucosa lesions remain a significant problem. The potential for non-steroidal anti-inflammatory drugs (NSAID) to cause erosive and ulcerative gastric mucosa lesions is well known. NSAIDs are used by over 30 million people daily across the globe [20]. Studies have shown that NSAIDs are associated with gastropathy (NSAID-induced gastropathy - NIG) irrespective of the duration of use, and the use of NSAIDs has become widespread due to the availability of these agents both as prescription and as over-the-counter (OTC) medicines [21]. Overall, mortality in patients suffering from an upper gastrointestinal (UGI) bleed or perforation related to NSAIDs use is estimated to be about 1 in 5 [22]. It is likely that age is an important independent risk factor for NIG complications. The message for the clinician is that gastroprotection and should mainly be considered in those over the age of 60 years. Moreover, in those over the age of 60, the threshold to offer gastroprotection should decrease as age increases with a particular consideration given to those over the age of 80 years [23]. The same NIG situation at the drug-associated gastric mucosa lesions have been described for: antiplatelet, anticoagulant medication therapy and selective serotonin reuptake inhibitors in addition to the well-known corticosteroid's adverse effects. The situation is exacerbated by comorbid conditions such as: malignancy had a 6-fold, those with renal disease a 5-fold, and those with hepatic disease a 4-fold increased risk of mortality from peptic ulcer bleeding [24].

It should be noted the potential for a reactive gastropathy greater prevalence for a whole series of drugs and the wide range of drug related changes seen in gastrointestinal biopsies [25]. Reactive gastropathy represents another distinct type gastric injury that is mainly caused by bile reflux through the pylorus, but also by other noxious agents, such as drugs or ethanol [26].

Since 2000, 10 international symposiums have been held under the general title "International Symposia on Cell/Tissue Injury and Cytoprotection/Organoprotection", in the materials of which the results of numerous studies on cytoprotection have been published. In the context of cytoprotection of the gastric mucosa, attention should be paid to the materials of the 7th Symposium [27], a significant part of which is devoted to the mucous membrane digestive organs, and above gastric mucosa cytoprotection. The proceedings of this international symposium emphasize that the definition of gastroprotection is more complex and is based on the results of multidisciplinary studies in a large number of laboratories around the world. Participants of the 7th International Symposium on Digestive Mucosal Cytoprotection summarized the definition of gastroprotection as follows: preservation of subepithelial endothelial cells and microcirculation, providing surviving foveolar cells of the gastric mucosa, their ability to migrate and proliferate, which together provides adequate repair of epithelial cells of the surface layer of the mucous membrane. The clinically important part is emphasized: "gastric cytoprotection = gastroprotection" is the prevention (by PG, PL, SH, NO, etc.) of chemically induced hemorrhagic erosions of the stomach, by substances other than those that have an inhibitory effect on gastric acid secretion, while preservation of microcirculation is a key element.

Differences in Gastroprotection in Asian and Western Countries

In Western countries, hyper-acidic condition should be a primitive factor for gastric disorders. This is the main reason that physicians in Western countries choose the anti-acid secretion drugs such as proton-pump inhibitors or histamine receptor-2 antagonist for treatments [28]. On the other hand, in Asian countries, mucosal protective agents are also a powerful tool for the clinical. in Asian countries including Japan, Korea and China, the degree of acid secretion is not so high as that in Western countries. [29]. The presented our results of analytical publication on the gastric mucosa cytoprotection showed significant changes in practical ways. Clinically important part of the cytoprotection definition is the prevention chemically induced gastric erosions by substances other than providing an inhibitory action on gastric acid secretion, for the retention of the microcirculation is a key element [30]. There is an increase in research on various aspects of the phenomenon of cryoprotection with the intensification of the search of substances with really cytoprotective effect. These substances have significant characteristics – they have no inhibitory effect on the secretion of acidic gastric mucosa. Such substances allow for effective drug therapy erosions of the gastric mucosa, especially in the medical need for non-steroidal anti-inflammatory agents. The current rationale for drug treatment in gastritis is similar to other gastrointestinal disorders (e.g., non-ulcer dyspepsia), and depends mainly on symptomatic relief using gastroprotective agents (e.g., rebamipide, teprenone, ecabet sodium, sofalcone, cetraxate, etc.). Databases publications (PubMed, ScienceDirect) analysis shows that the development of gastroprotectors based on components from natural plant products is usually carried out in Asian countries, primarily such as Japan, China and Korea. It should be emphasized, gastritis, the "precursor" lesion to mucosal ulceration is both an important clinical entity and an important cause of abdominal pain in children [31]. Moreover, Japan Anatomical Therapeutic Chemical (ATC) classification included position DGROUP: Gastric mucosal protectant, with

19 different components {https://www.genome.jp/entry/DG02008} and in the comments to this section it is written: "This medicine increases secretion of gastric mucus, and promotes protection and repair of damaged gastric mucosa. It is usually used in the improvement of acute gastritis and gastric mucosal lesion in acute exacerbation of chronic gastritis (erosion, bleeding, flare, and edema) and treatment of gastric ulcer". For a number of natural gastroprotectors, there are a significant number of publications showing that such gastroprotectors have additional properties, such as: antioxidative, superoxide and hydroxyl radical's scavenger, possesses potent anti-inflammatory activities, regenerates mucosal epithelial cells, and enhances the cytoprotective cytokines. For example, Eupatilin from Artemisia argyi (A. argyi) is a medicinal plant that belongs to the Asteraceae family and Artemisia genus. [32]. Comparative analysis of literature searched through sources available confirmed that the ethnopharmacological use of A. asiatica was recorded in Korea, China, and Japan. Phytochemical studies revealed the presence of flavonoids, sesquiterpene lactones, monoterpenes, and steroids in A. asiatica. Of these, flavonoids have been shown to exhibit significant pharmacological effects such as gastroprotective, anti-inflammatory, anti-tumor, and anti-microbial actions. Korean authors [33], summing up the effectiveness of Eupatilin, noted the following: Comparative analysis of literature searched through sources available confirmed that the ethnopharmacological use of A. asiatica was recorded in Korea, China, and Japan. Phytochemical studies revealed the presence of flavonoids, sesquiterpene lactones, monoterpenes, and steroids in A. asiatica. Of these, flavonoids have been shown to exhibit significant pharmacological effects such as gastroprotective, anti-inflammatory, anti-tumor, and anti-microbial actions. Authors further noted: "Toxicity studies with A. asiatica have been conducted in order to assess the safety of plant extracts. According to a clinical study on the safety and efficacy of DA-9601(Eupatilin) and DA-5024(Cetraxate) performed with 434 patients having gastric mucosal erosion, it was found that there were no clear toxicological effects on various biochemical markers." This authors statement is true for almost all natural gastroprotectors. Moreover, there is a product on the market based on pine needle extract with the name Bioeffectives®. Bioeffective® is so easily assimilated, has such high efficacy and extremely low toxicity. It is also why it has such a wide range of applications in the prevention and treatment of illnesses and in the promotion of health. Bioeffective® Approximately 90 clinical and preclinical trials completed in a number of areas, including: Liver Disease, Alzheimers, Antiviral, Detoxification, Helicobacter Pylori, Alcoholism, Hormone regulation, Immune system, Oncology support. Let's pay attention to one study [34], the authors of which showed the following: A tablet form of CGNC (extracted from Pinus Silvestri and Pine abies (L) Karst) was prescribed to 26 patients with precancerous gastric lesions (two tablets, 100mg тCGNC/tablet, three times per day for six months). Another 24 patients received no treatment. Results. Compared with control patients, CGNC-treated patients showed total or partial regression (using the quantitative Rome III diagnostic criteria) of dyspeptic symptoms (92.3%, $\mathcal{P}$ < 0.0001), eradication of *H. pylori* infection (57.1%, $\mathcal{P}$ < 0.03), a reduction in endoscopic signs of gastritis (92.3%, $\mathcal{P}$ < 0.001), an increase of pepsinogen-pepsin in the gastric juice (57.7%, $\mathcal{P}$ < 0.05), and total regression or reduction in the degree of intestinal metaplasia (46.2%, $\mathcal{P}$ < 0.05) and lymphoplasmacytic infiltration (53.8%, $\mathcal{P}$ < 0.05).

A Promising Natural Product for Gastroprotection

We chose Pinus Silvestri as the raw materials for the developed product - Dense Conifer Needle Extract/DCNE (Fitesten®/FTS) Pre-clinical results of Dense Conifer Needle Extract (Fitesten®) with assessment preventive effect of DCNE on the Acute Indomethacin Model of Ulcerogenesis. The animals were divided into groups: 1. group — control— indomethacin - 20 mg/kg; 2. group- experiment — allantoin 20 mg/kg + indomethacin; 3. group — experiment — sea buckthorn oil 1 ml/kg + indomethacin; "4. group — experiment DCNE 40.0 mg/kg + indomethacin. All the animals have a pronounced inflammatory process; in group with indomethacin+DCNE only one animal has gastritis but less pronounced in comparison with the previous groups. Anti-Ulcerogenic Action of DCNE at Chronic Acetate exposure showed complete epithelization of the ulcer surface was observed by the 21st day in 25% of cases. A significant decrease of absolute number of perforations, large multilocular cysts and purulent abscesses were observed. Clinical study data. Fitesten® (FTS) effect on gastric hydrochloric acid secretion: ehe intragastric pH measurement was performed, and FTS effect on gastric hydrochloric acid secretion was tested in 20 patients. The clinical findings provided evidence that FTS does not stimulate H-ions secretion and does not decrease this secretion. pH test lists did not show any duodenogastric reflux signs. Determination secretory immunoglobulin A (sIgA) level performed by radial immunodiffusion method. Of the 23 cases, sIgA above the upper reference value was found in saliva in 19 patients (82,6% (95% C.I. (Fisher's) = 61,2 - 95,0), in gastric juice in 13 patients 56,5% (95% C.I. (Fisher's) = 34,5 - 76,8). There is a credible ($p<0.05$) proof of increased sIgA level in saliva in patients receiving FTS compared with patients without. This might be connected with the increase of mucosa protective qualities in the presence of FTS. When FTS treatment course was completed gastric mucosa mucine increased excretion was observed in dynamics and goblet cells in duodenal mucosa growth in absolute number. It is well known that, goblet cells are abundant constituents of the intestinal surface epithelium in both small and large intestine, and goblet cells are considered to play a role in mucosal protection [35]. The results of the preclinical and clinical trials clearly demonstrate the presence of gastroprotective effects in the Pinus Silvestri Dense Conifer Needle Extract without impairing stomach acid function.

Conclusions

The following conclusions can be drawn from this article's review of the current regulations regarding gastropathy, gastritis, and gastroprotection. Practitioner needs: One more agreement on the unification of the concepts of chronic gastritis and gastropathy, two international agreements on the connections between different types of gastritis and gastropathy, and three evidence-based opinions on gastroprotection without gastric acid suppression.

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