

# Pepsin

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**Pepsin** je obecné označení pro řadu **proteináz** (pepsin A,B,C – EC 3.4.23.1,2,3), pepsinogeny jsou jejich **prekurzory** (proenzymy). Aktivace **pepsinogenu A** na **pepsin A** probíhá v kyselém prostředí, vznikající **pepsin A** je schopen další aktivace pepsinogenu a vede k tzv. autokatalýze. Elektroforeticky lze separovat v agarovém gelu 8 **proteáz** žaludeční sliznice, pepsinogeny PG1-PG5 tvoří skupinu imunologicky identických proteinů – pepsinogen I (PG-I, PGA), pepsinogeny PG6 a PG7 tvoří skupinu pepsinogenu II (PG-II, PGC), posledním proteinem je katepsin E (SMP, **slow moving proteinase**). Molekulová hmotnost pepsinogenu I je 42 500.

Pepsin se řadí mezi **endopeptidázy**, hydrolyzuje tedy peptidové vazby uvnitř molekuly, čímž ji štěpí na menší fragmenty. V žaludeční šťávě hydrolyzuje vazby v blízkosti aminokyselin, které mají velké postranní řetězce (AMK s aromatickými zbytky, rozvětvenými řetězci a methionin).<sup>[1]</sup>

## Klinický význam

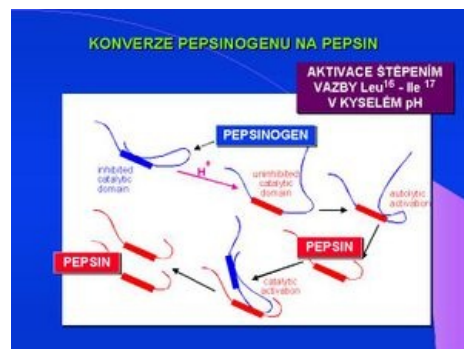
Klinický význam má stanovení pepsinu při insulinovém testu a sérová hladina pepsinogenů A a C. Ke stanovení se používá RIA metodika s <sup>125</sup>I-pepsinogenem v kompetitivním uspořádání. Pepsinogen A je markerem slizniční atrofie a je používán v genetických studiích jako subklinický marker vředové choroby duodena. **Pepsinogen C** je používán jako marker stavu žaludeční sliznice (případně v poměru PG-A/PG-C) a rovněž jako marker eradikace infekce *Helicobacter pylori*. Snížení hladiny pepsinogenu A prokazujeme u nemocných s achlorhydrií, např. u perniciózní anémie. Nejnovější studie prokazují významné snížení pepsinogenu-I a současně zvýšení hladiny IgA protilátek k *Helicobacter pylori* u karcinomu žaludku.

**Stanovení poměru hladin** obou pepsinogenů (PG-I:PG-II) je dnes považováno za nejvýhodnější variantu serologických markerů. Poměr PG-I:PG-II signifikantně klesá v závislosti na histologickém riziku, nebo přítomnosti vacA+ pozitivitu *Helicobacter pylori* infekce. Kombinace stanovení hladiny pepsinogenu-I, gastrinu-17 a protilátek k *Helicobacter pylori* je testováno jako tzv. serologická biopsie, GastroPanel, v diferenciální diagnostice gastritid. Screeningové testování rizika atrofické gastritidy, resp. rizika karcinomu žaludku, ve spojení s pozitivitou *Helicobacter pylori*, je další oblastí screeningu nádorů gastrointestinálního traktu.

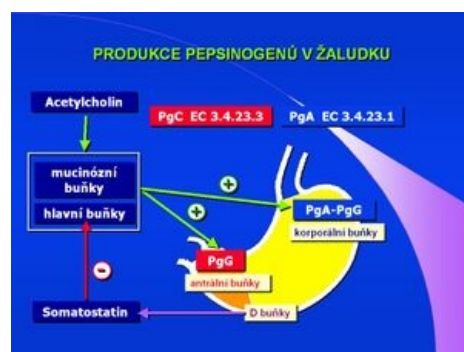
## Odkazy

### Použitá literatura

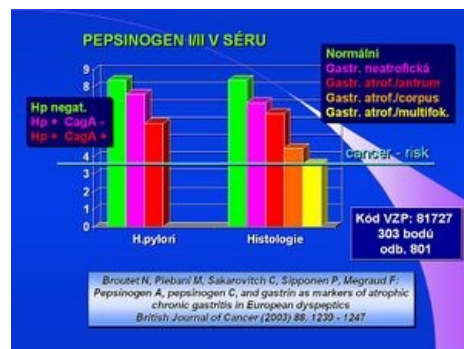
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Konverze pepsinogenu na pepsin



Produkce pepsinogenů v žaludku



Pepsinogen I/II v séru

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