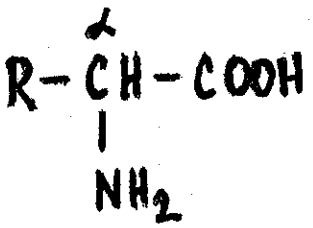
Organické sloučeniny živých systémů dělíme do 4 skupin:

1. **Bílkoviny** – makromolekulární látky; sestaveny z α-aminokyselin.



Funkce aminokyselin: - stavební jednotky bílkovin
- prekursory řady látek, např. hormonů, alkaloidů, porfyrinů, rostlinných barviv
- purinové a pyrimidinové báze jsou součástí nukleotidů a ty jsou: - stavebními jednotkami nukleových kyselin
- přenašeči energie
- složkami molekul biokatalyzátorů

Bílkoviny tvoří 50 – 80 % suché hmoty organismů, jsou to nejhojnější organické sloučeniny.

Funkce bílkovin: - stavební
- podpůrná
- transportní
- vysoce specializované: - katalytické (enzymy)
- regulační (hormony)
- obranné (protilátky)

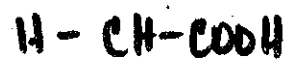
Nejjednodušší bakterie obsahují ..... přes 3 000 bílkovin,
savčí buňka ..... asi 10 000 druhů bílkovin,
v lidském těle ..... 5 milionů druhů bílkovin.

AMINOKYSELINY

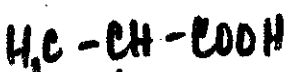
I. kódované aminokyseliny

1. aminokyseliny alifatické

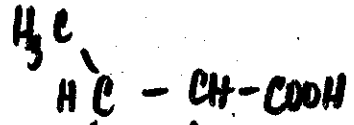
- monoaminomonokarbonové



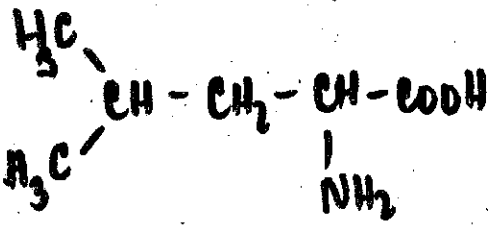
glycin



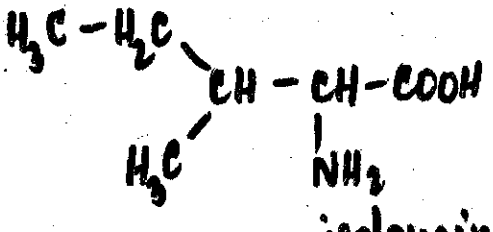
alanin



valin

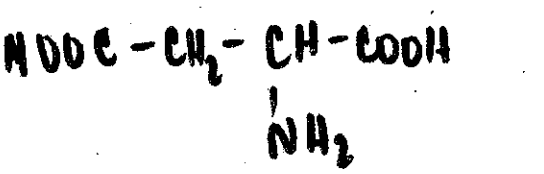


leucin

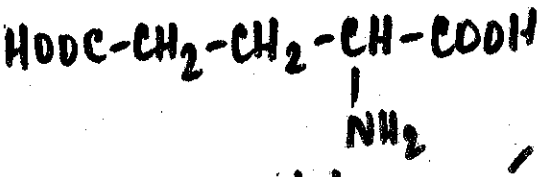


isoleucin

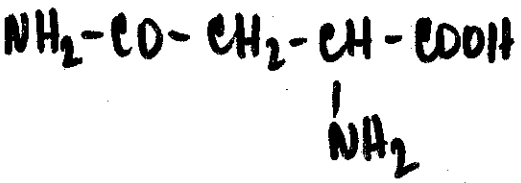
- monoaminodikarbonové



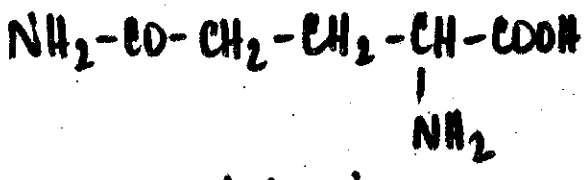
kys. asparagová



kys. glutamová

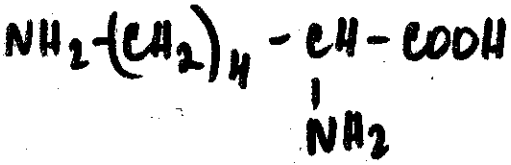


asparagin

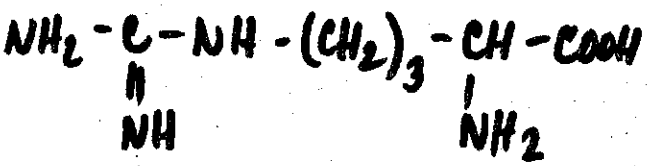


glutamin

• diaminomonokarbonové

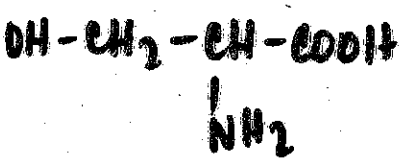


lysin

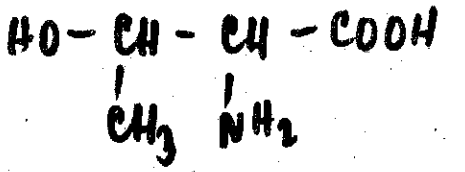


arginin

• hydroxyderiváty

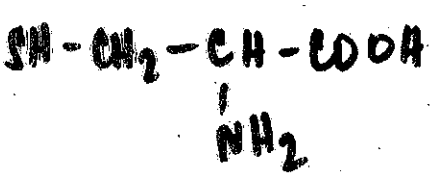


serin

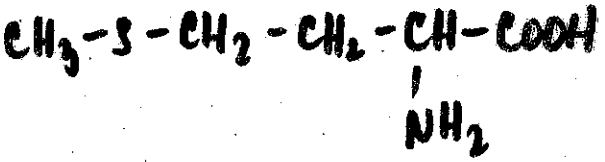


threonin

• sirné deriváty

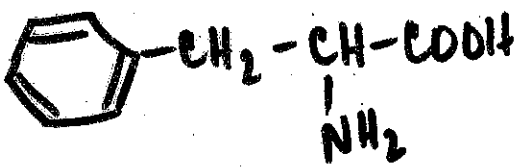


cystein

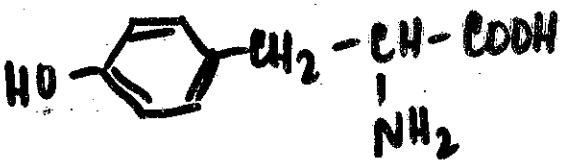


methionin

2. aminokyseliny aromatické

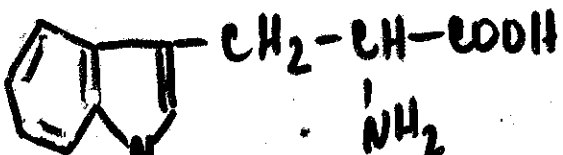


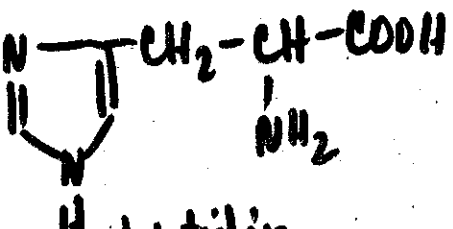
fenylalanin



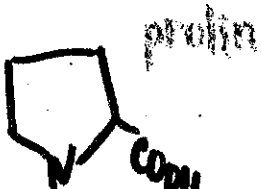
tyrosin

3. aminokyseliny heterocyklické





histidin



prolin

PEPTIDY

Jádrem struktury peptidů i bílkovin je peptidový řetězec.

Peptidy:

- **oligopeptidy – do 10 AMK (dipeptidy, tripeptidy, …)**
- **polypeptidy (do 100 AMK)**

nad 100 AMK → bílkoviny

Nejvýznamnější oligopeptidy:

Dipeptidy

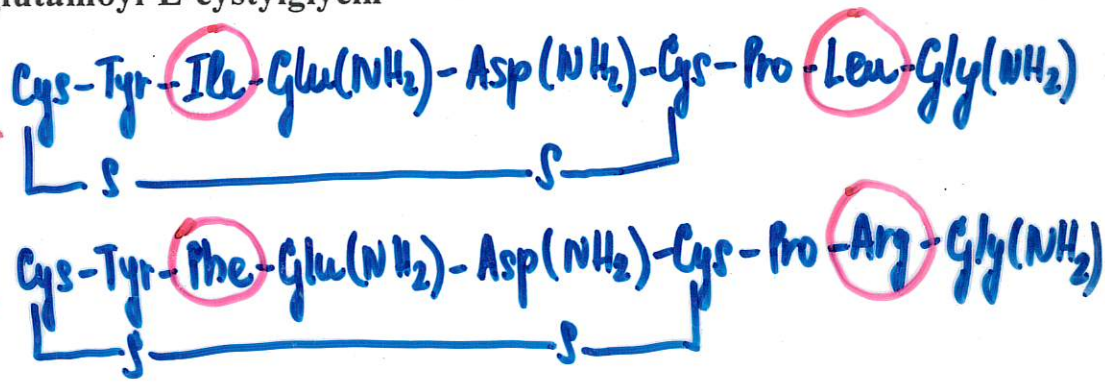
karnosin = β-alanylhistidin
anserin
} **nacházejí se ve svalové tkáni, jejich význam je zatím nejasný**

Tripeptid

glutathion = χ-L-glutamoyl-L-cystylglycin

Nonapeptidy

oxytocyn
vasopresin



Dekapeptidy: **antibiotika, např. gramicidin S**
bacitraciny – antibiotika produkovaná mikroorganismy

Cyklické peptidy: **např. gramicidin S**

Polypeptidy: **nisiny – směs polypeptidů produkovaná mléčnými baktériemi**