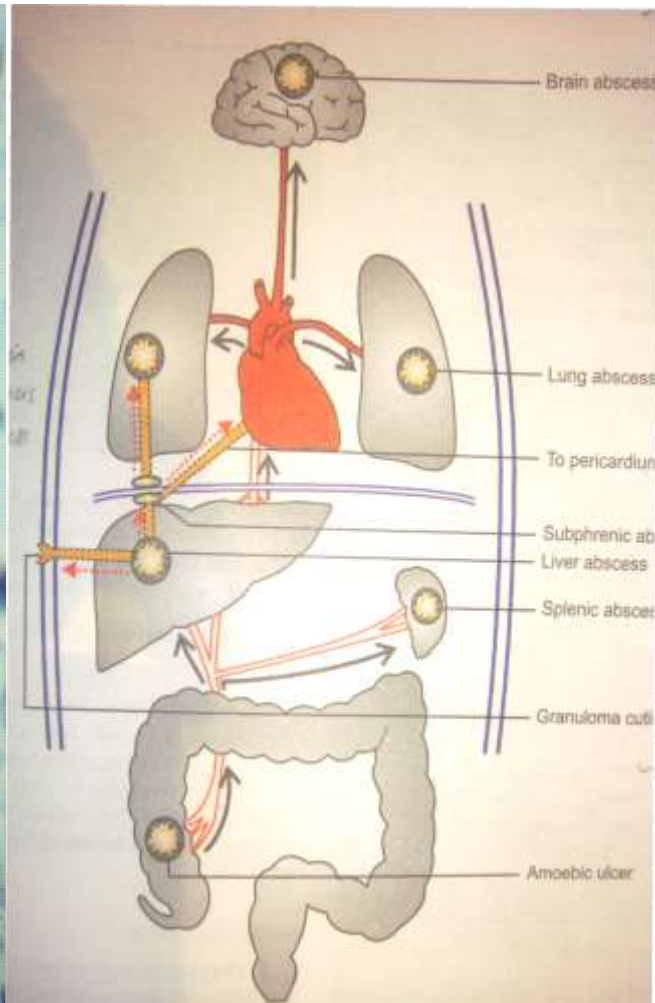
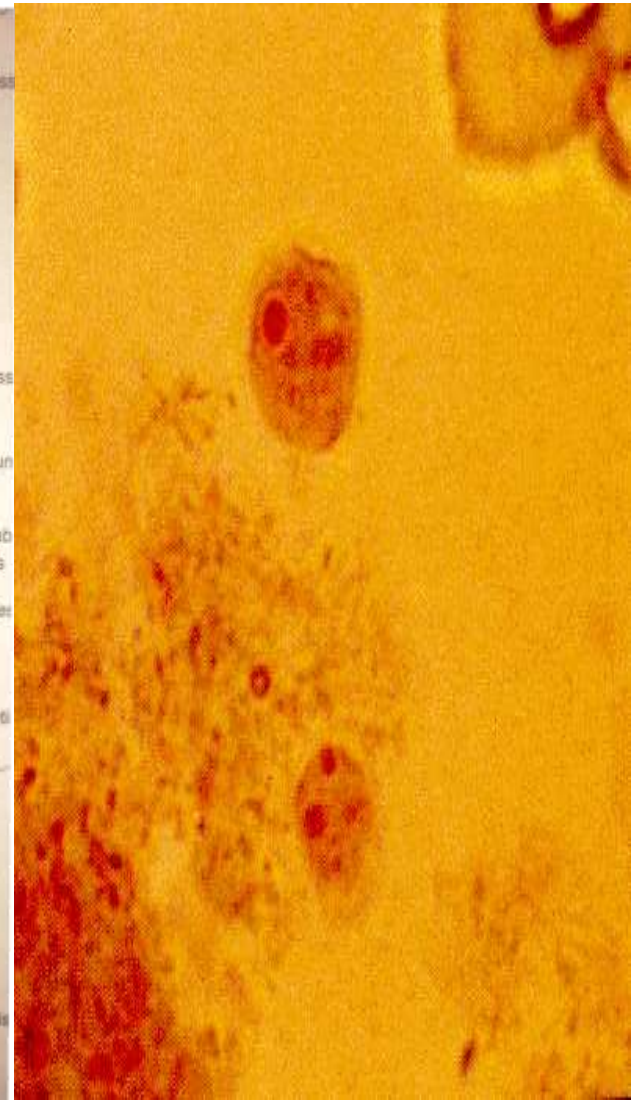


ENTAMOEBA HISTOLYTICA



Schematic representation of routes of origin and locations of extraintestinal amoebiasis. Solid arrows indicate route of origin and interrupted arrows indicate direct spread of amoebae.



AMOEBAE

INTRODUCTION :

Sarcomastigophora	(phylum)
Sarcodina	(subphylum)
Rhizopoda	(superclass)
Lobosea	(class)
Euamoebida (order) - Entamoeba, Endolimax, Iodamoeba (genus)	Amoebida (order) -
Acanthamoeba, Balamuthia (genus)	Schizopyrenida
(order) - Negleria (genus)	

SIX SPICES OF AMOEBAE :

- Entamoeba histolytica
- E.hartmanni
- E.coli
- E.gingivalis
- Endolimax nana
- Iodamoeba buetshlii - Commonly found in human mouth and intestines
- Only E.histolytica is of medical importance

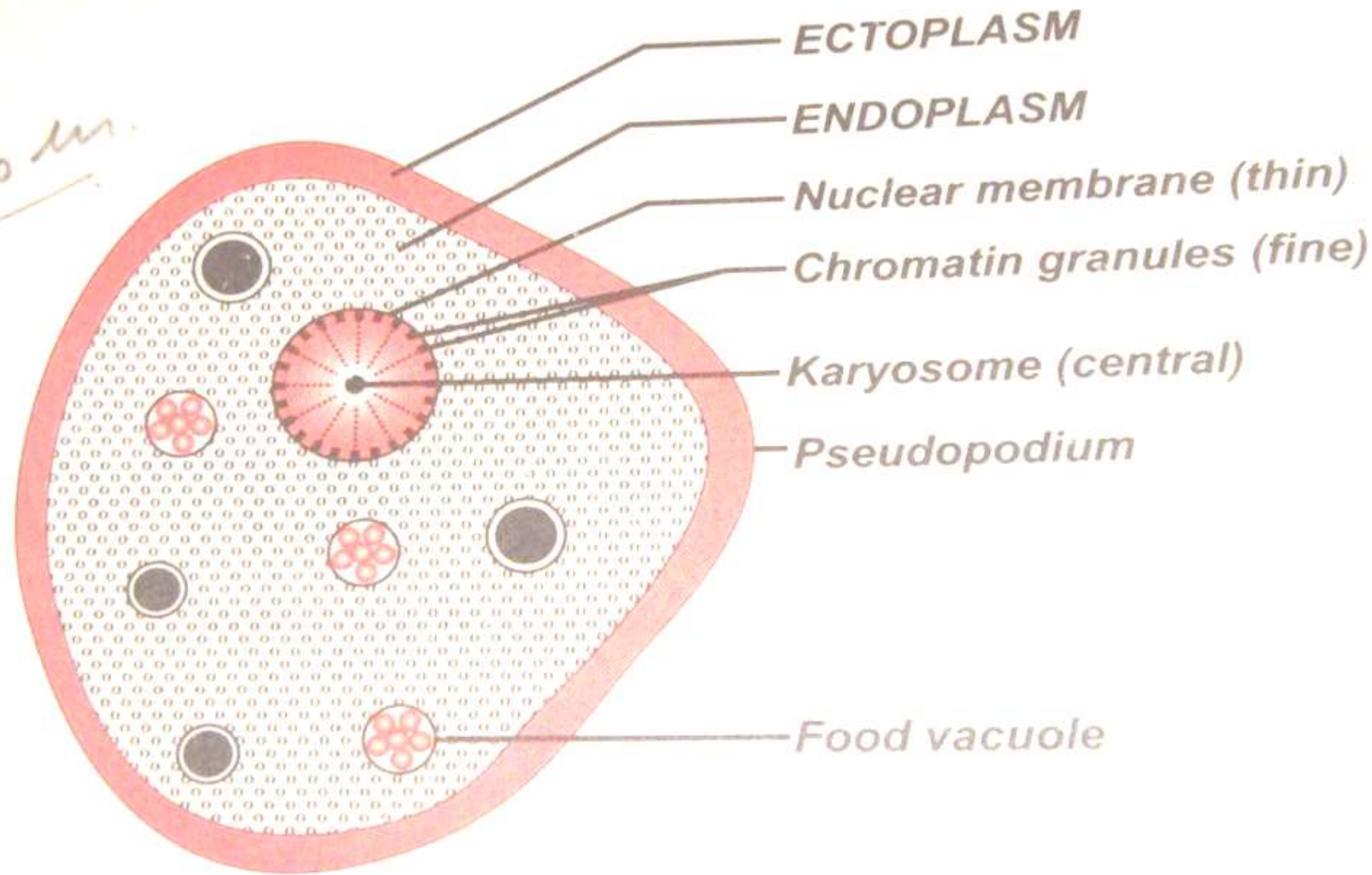
ENTAMOEBA HISTOLYTICA

HABITAT : Mucosa and submucosa of **L.I** of man

MORPHOLOGY : Three forms

1. TROPHOZOITE – Size 20-30 um, **Motile**

- Ectoplasm & Endoplasm
- **Nucleus** – Size 4-6 um, central dot-like karyosome and nuclear membrane is lined by fine chromatin granules
- **The only form present in the tissues.**



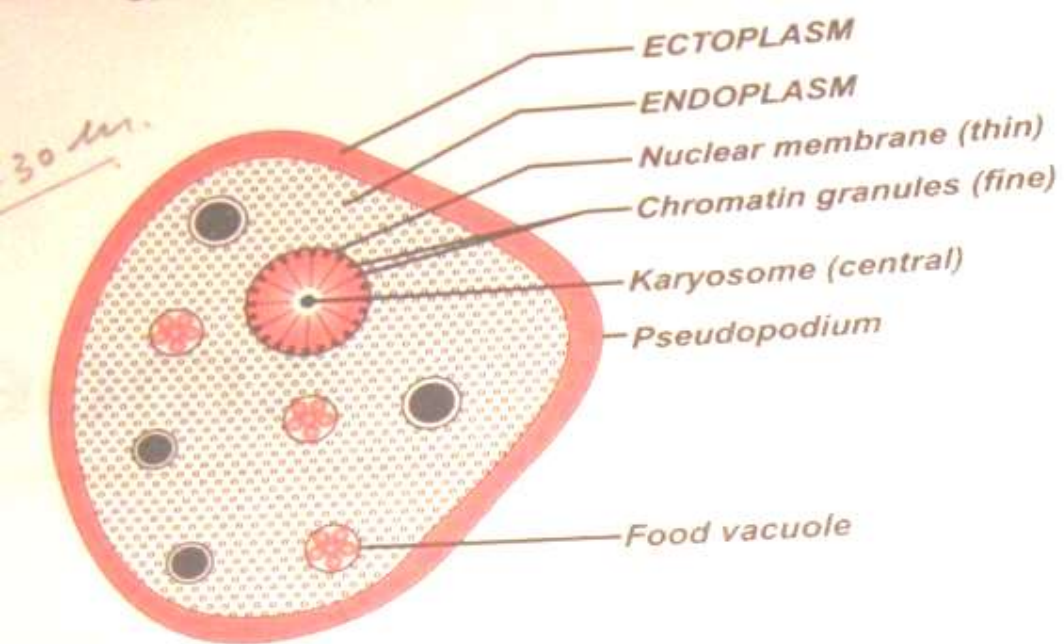
Trophozoite

2. PRECYST :

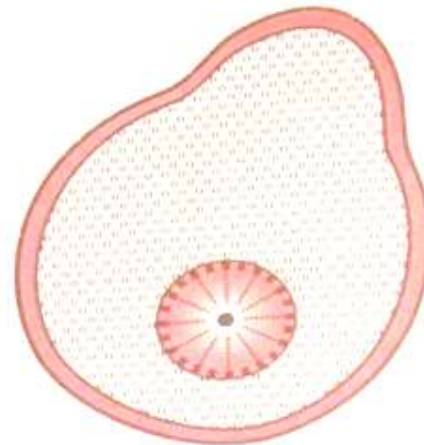
- Size 10-20 um, oval with blunt pseudopodium, food vacuoles disappear
- No change in nucleus.

3. CYST :

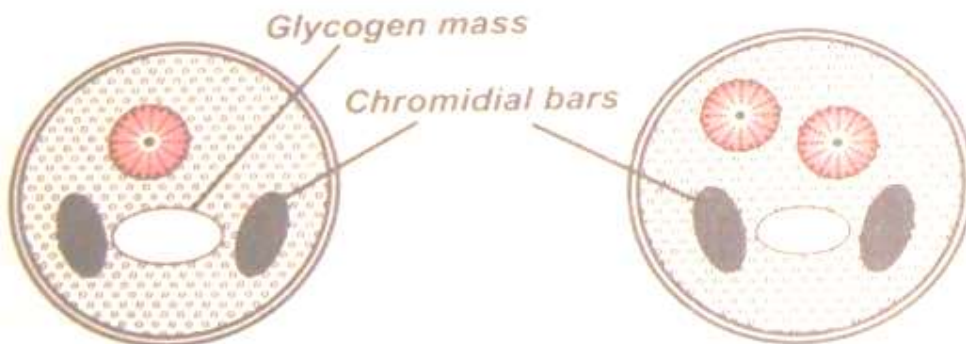
- Spherical 10-15 micron
- **Uninucleate** and **Binucleate** cysts also possess a glycogen mass and 1-4 chromidial bars but not in **Quadrinucleate** cysts



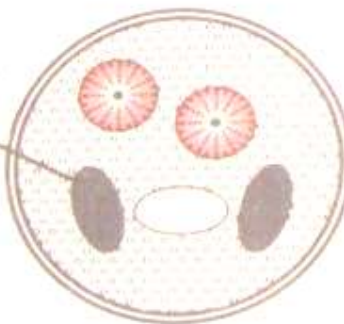
Trophozoite



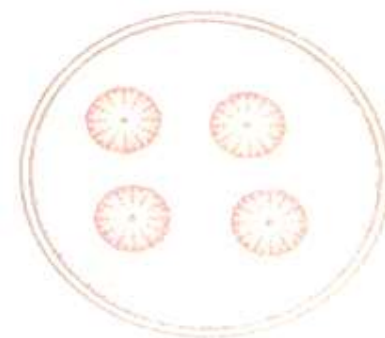
Pre-cyst



Uninucleate



Binucleate



Quadri-nucleate

Cysts

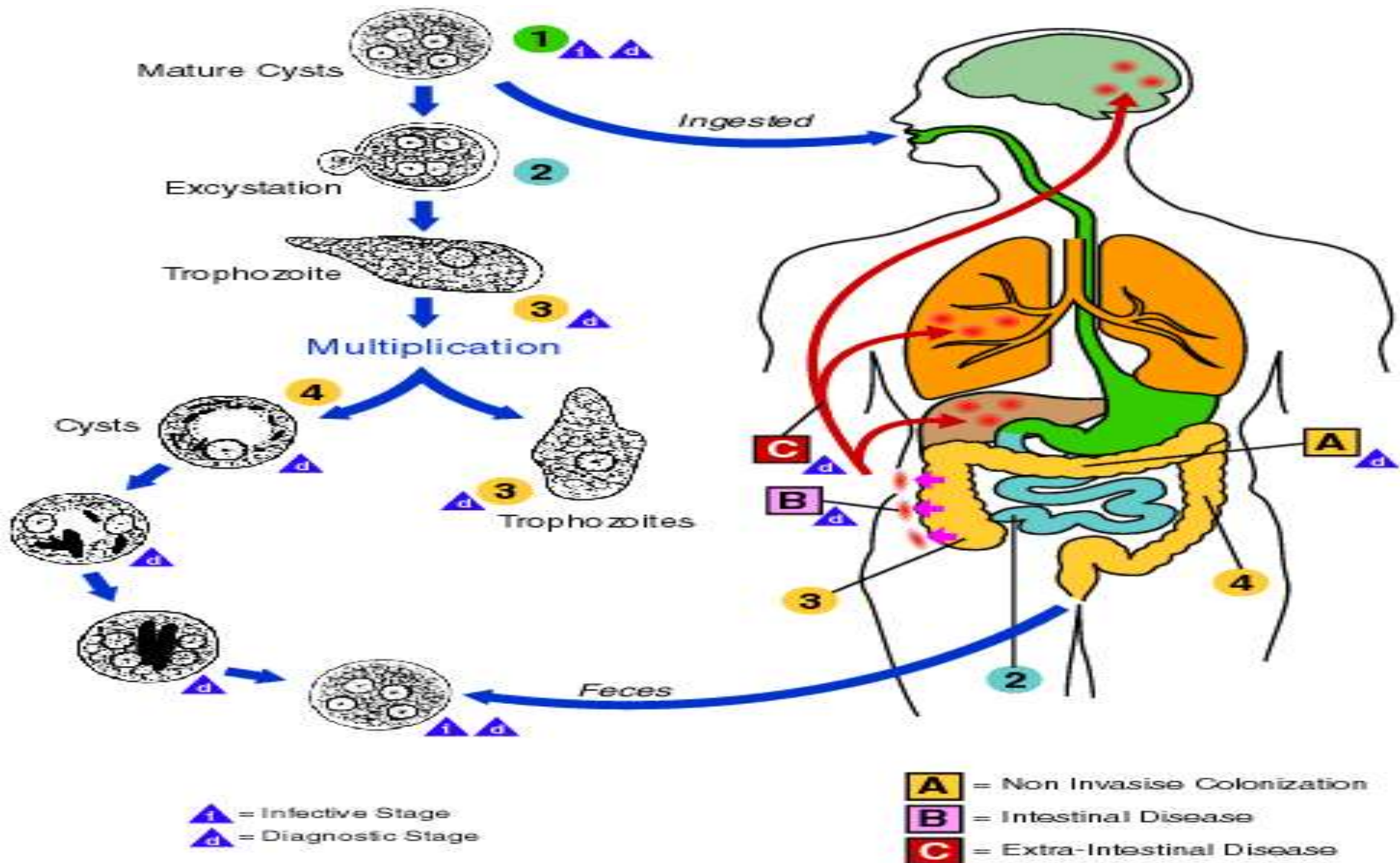
CULTIVATION

CULTURE MEDIA :

- Diphasic medium by Boeck and Drbohlav (1925)
- **Polyxenic** liquid media with enteric bacteria or the flagellate (*Trypanosoma cruzi*) and starch by *Balamuth & Nelson* (1946-47)

- **Axenic** cultivation in the absence of bacteria by *Diamond* (1961) – trypticase, ox-liver digest, glucose, cysteine, ascorbic acid & horse serum
- *Philips* medium
- *Shafter & Fry's* medium

LIFE CYCLE

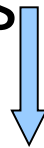


LIFE CYCLE

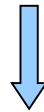
Only **one host** - Man



Water and food contaminated with
quadrinucleate cysts

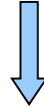


Cyst wall lysed by trypsin in S.I



Each nucleus gives rise to eight nuclei by binary
fission





Immediately cytoplasm becomes separated

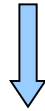


from each mature cyst eight small amoebulae
(metacystic trophozoites) are produced

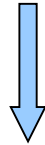


EXCYSTATION

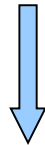




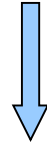
In L.I - invade the mucosa and lodge in sub-mucous tissue



patient developed resistance



starts passing normal stool

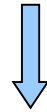


Trophozoites
particles

discharge

undigested

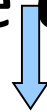
food



transform into **precyst**

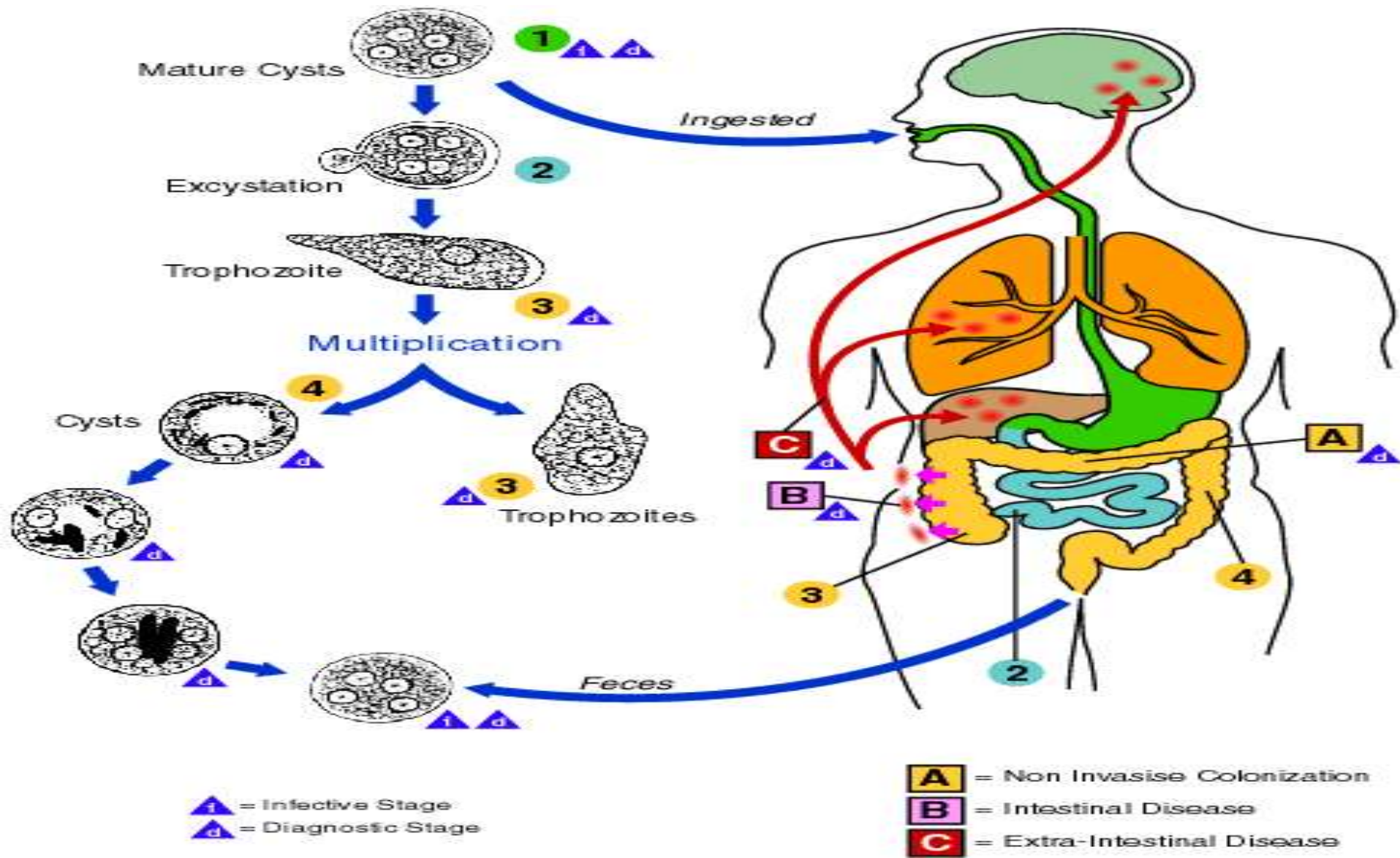


then into mature **quadrinucleate** cyst



ENCYSTATION

PATHOGENICITY

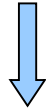


PATHOGENICITY

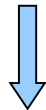
INTESTINAL & EXTRAINTESTINAL

INTESTINAL AMOEBIASIS :

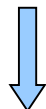
E.H  Histolysin (a proteolytic enzyme)



penetrate in columnar epith. cells



crypt of lieberkuhn



necrosis and destruction of tissue



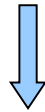
profuse bloody diarrhoea (**amoebic dysentery**)



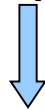
E.H may also cause **amoebic appendicitis** and **amoebomas** (pseudotumoural lesions in vertical segments of L.I)

EXTRAINTESTINAL AMOEBIASIS : (5%)

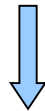
Trophozoites enter into the radicles of portal vein from amoebic ulcer in L.I

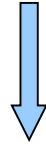


Liver hold these parasite

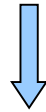


obstruction of portal veins

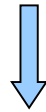




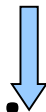
Anaemic necrosis of hepatic cell



cytolysis



small miliary abscess --- form big liver abscess



Develop hepatic amoebiasis

- Confined to postero-superior of right lobe and differentiated into 3 zones –

NECROTIC CENTRE (thick, red-brown pus, no amoebae – anchovy sauce appearance)

INTERMEDIATE ZONE (degenerated liver cells, RBCs, WBCs and occ. trophozoites of E.H)

OUTER ZONE (just being invaded by amoeba)

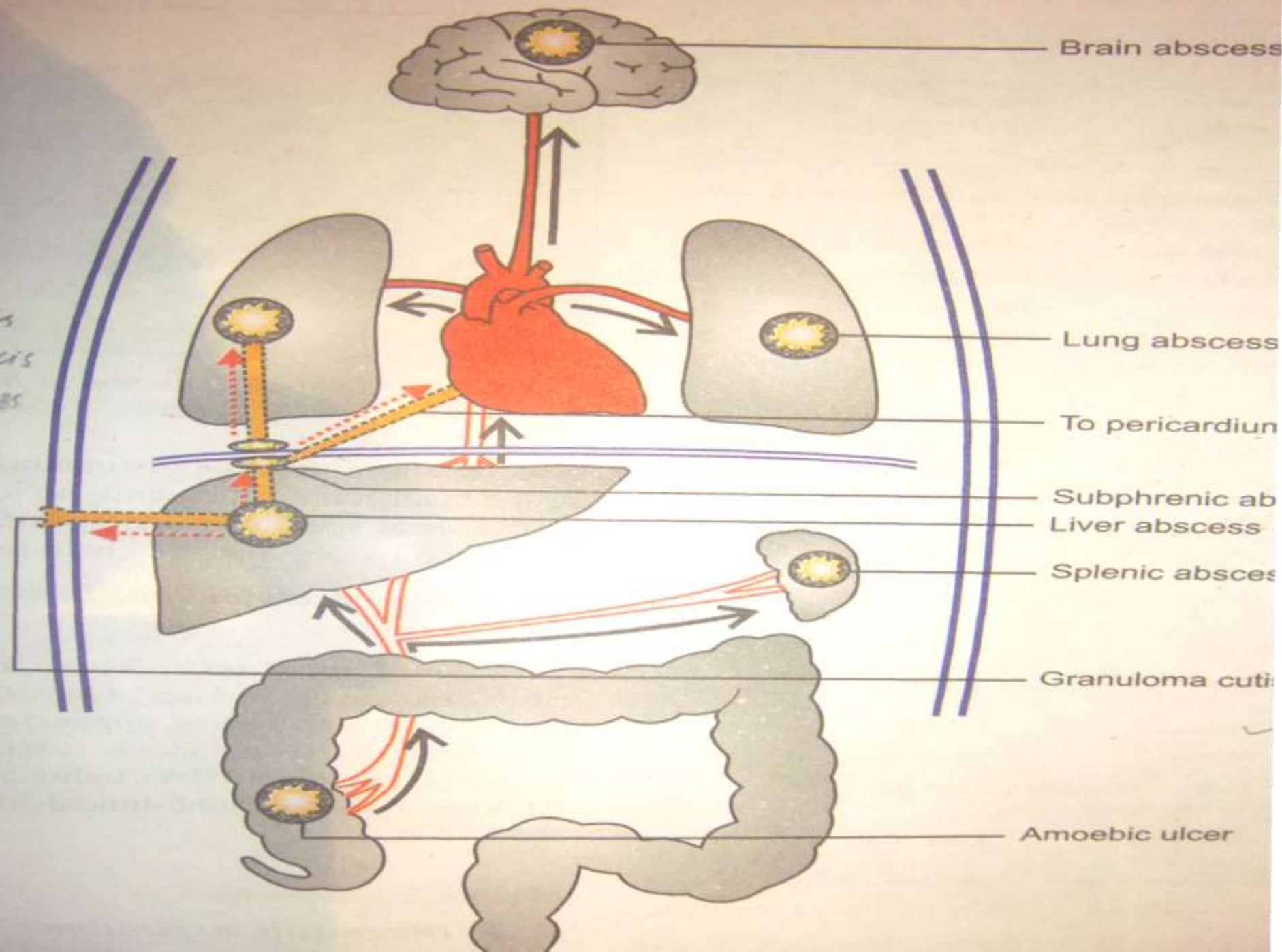
COMPLICATIONS OF AMOEBIC LIVER ABSCESS

RIGHT SIDE :

- **Skin-** granuloma cutis
- **Lungs-** lung abscess
- **Pl.cavity** – emphyma thoracis
- **below Diaphragm** – subphrenic abscess,
- **Pertonal cavity** – peritonitis

LEFT SIDE :

- +
- **Stomach** – haematemesis
- **Pericardial cavity** – pericarditis



INFERIOR SURFACE :

- Bowel and Peritoneal cavity

POSTERIOR SURFACE :

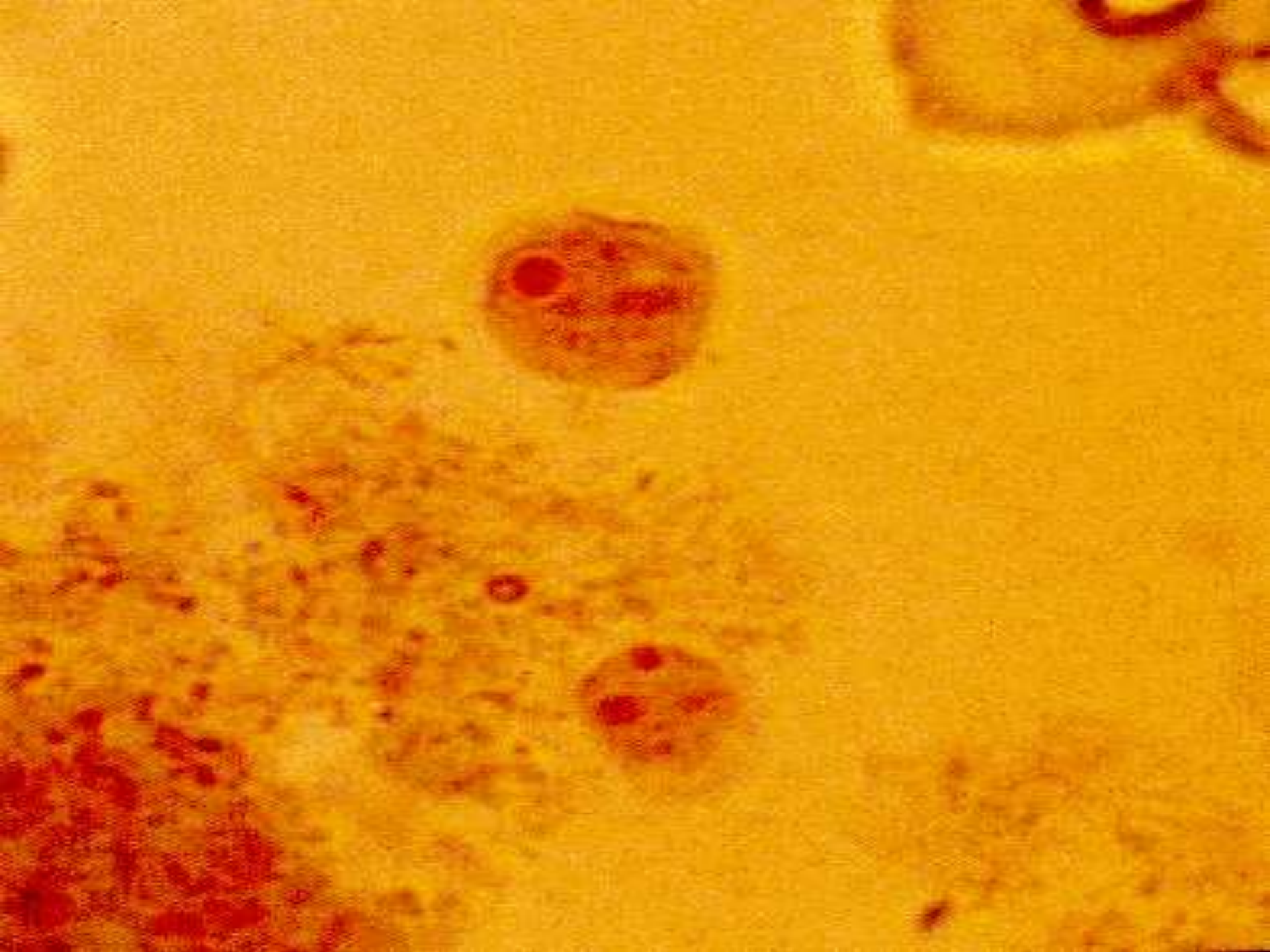
- IVC --- fatal
- Can cause ***Brain abscess*** and also enter in ***General circulation***

LABORATORY DIAGNOSIS

INTESTINAL AMOEBIASIS

HEPATIC AMOEBIASIS





HEPATIC AMOEBIASIS :

- Aspirated pus – Trophozoites of E.H
- Liver biopsy
- Blood exam. - Leucocytosis
- **Serological tests :**
 - IHA, IFA, IgG ELISA,
 - Amoebic **antigen** by ELISA is **better**
- Molecular methods – DNA probe, PCR

TREATMENT & PREVENTION

TREATMENT :

- In Liver abscess :
Chloroquine
- In tissue and intestinal lumen :
Metronidazole
Nitroimidazole

PREVENTION :

- Avoiding faecal contamination of food and water
- Higher level of chlorine in water
- Raw vegetables should be washed properly
- Food exposed to flies and cockroaches should not be consumed
- Wash hands before eating and after defecation
- Homosexuals should avoid anal-oral sexual practices