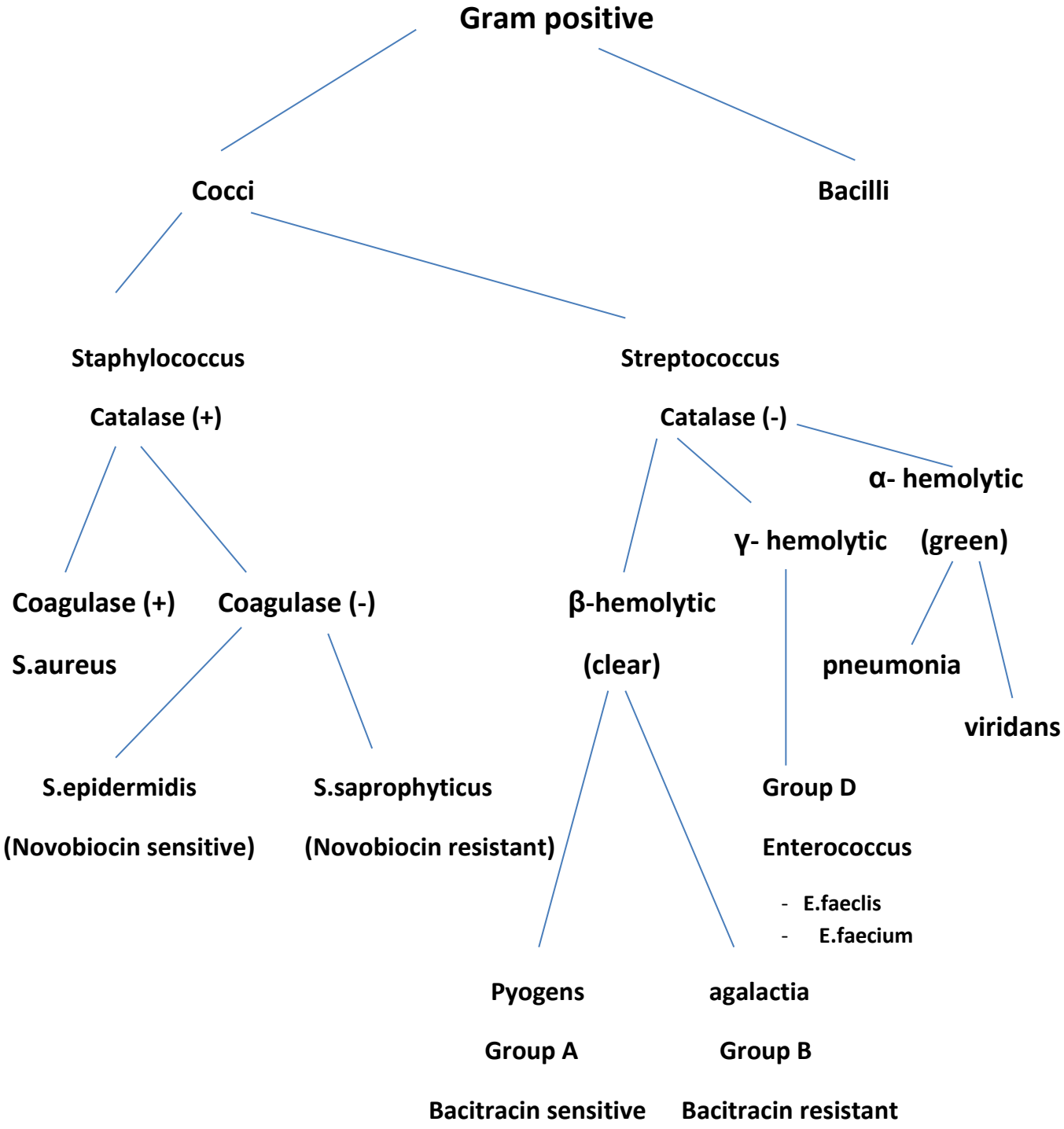
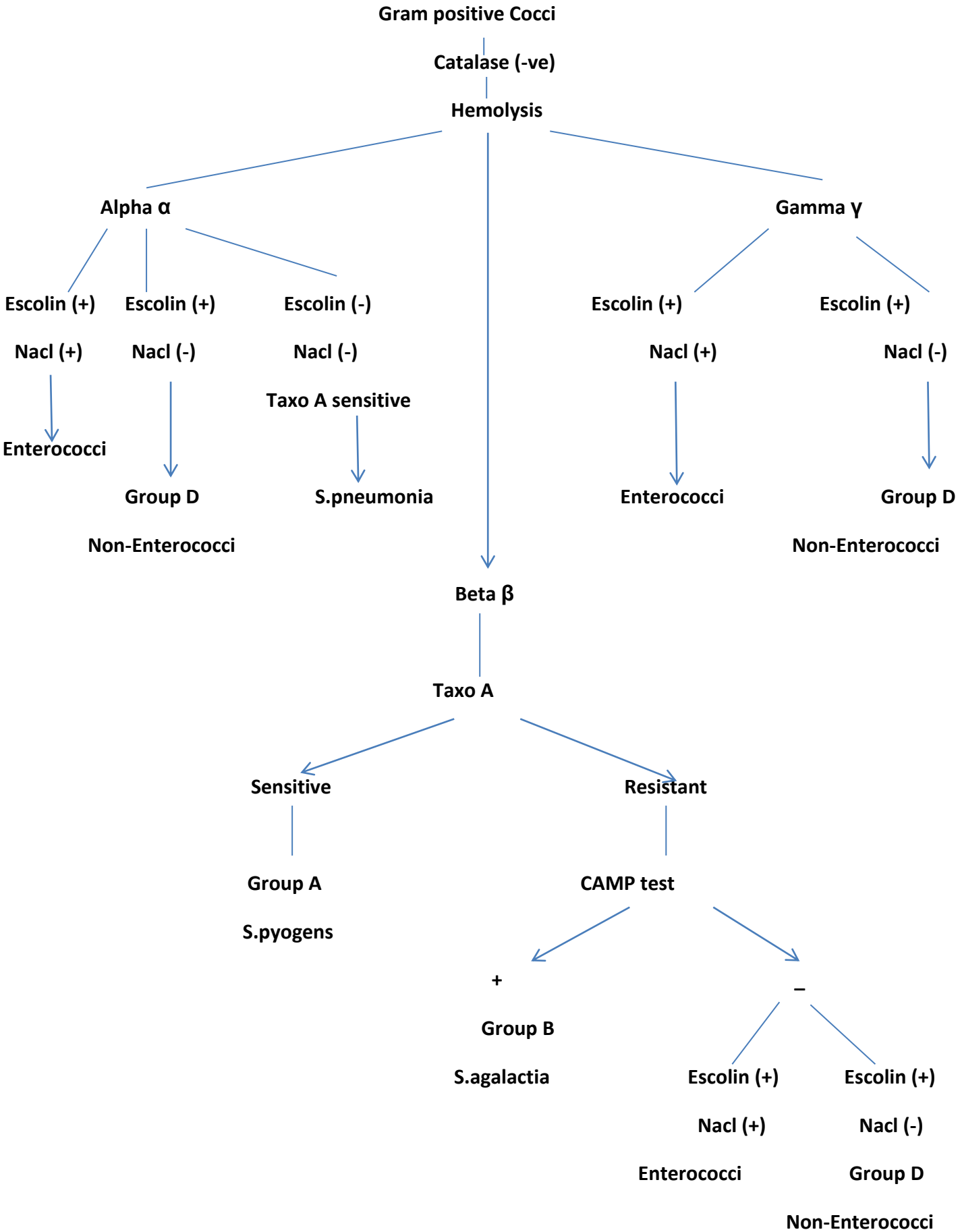

Gram positive
Cocci
Bacilli
Staphylococcus
Catalase (+)
Streptococcus
Catalase (-)
α- hemolytic
γ- hemolytic
(green)
Coagulase (+)
S.aureus
Coagulase (-)
β-hemolytic
(clear)
pneumonia
viridans
S.epidermidis
(Novobiocin sensitive)
S.saprophyticus
(Novobiocin resistant)
Group D
Enterococcus
- E.faeclis
- E.faecium
Pyogens
Group A
Bacitracin sensitive
agalactia
Group B
Bacitracin resistant


Gram positive Cocci
Catalase (-ve)
Hemolysis
Alpha α
Gamma γ
Escolin (+)
Nacl (+)
Enterococci
Escolin (+)
Nacl (-)
Group D
Non-Enterococci
Escolin (-)
Nacl (-)
Taxo A sensitive
S.pneumonia
Escolin (+)
Nacl (+)
Enterococci
Escolin (+)
Nacl (-)
Group D
Non-Enterococci
Beta β
Taxo A
Sensitive
Group A
S.pyogens
Resistant
CAMP test
+
Group B
S.agalactia
–
Escolin (+)
Nacl (+)
Enterococci
Escolin (+)
Nacl (-)
Group D
Non-Enterococci

Streptococcus Genus Charactaristics

Many members of strep.genus are normal flora to the mouth, nose and throat. The genus streptococcus is a complex group causing awide range of diseases such as (rheumatic fever, impetigo, pharyngitis, laryngitis, toxic shock syndrome, Scarlet fever and endocarditis) .

Strep. are often classified based on hemolysis which can be seen by their reaction on blood agar . α-hemolytic species produce alpha hemolysin which reduce hemoglobin(red)to methemoglobin (green)causing a brownish or greenish zone around the colony. B-hemolytic species produce hemolysin that forms a clear zone around the colony, indicating complete lysis of RBC. γ-hemolytic species are non-hemolytic having no apparent effect on RBC.

- Gram positive cocci (0.5-2 m indiameter) single, in pairs or chains, oxidase-negative .
- Non-motile-non-spore noforming-facultative anaerobes .
- Chemo-organotrophic (fermentative metabolism producing mainly lactose, no gas) .
- Require nutritionally rich media for growth such brain heart infusion agar (BHI) .
- Associated with mouth and upper respiratory tract .

	Streptococcus agalactia	Streptococcus bovis	Streptococcus Faecalis	Streptococcus mutans	Streptococcus pyogens
Macro-morphology	Medium	pinpoint	Medium	pinpoint	small
Oxygen Requirement	Facultative Anaerobe	Facultative Anaerobe	Facultative Anaerobe	Facultative Anaerobe	Facultative Anaerobe
Optochin	Resistant	Resistant	Variable	Resistant	Resistant
Bacitracin	Variable	Resistant	Resistant	Resistant	Susceptible
SXT	Resistant	variable	Variable	variable	Resistant
Hemolysis	Gamma	Alpha	Negative	Gamma	Beta
Heppurate	Positive	Negative	Positive	Negative	Negative
Salt tolerance	Variable	Negative	Positive	Negative	Negative
Bile Escolin	Negative	Variable	Positive	Positive	Negative

- **Bacitracin / SXT Sensitivity :-**

Intended use: bacitracin differential disks are used to presumptively identify group A, beta,hemolytic strep. the combination of SXT sensitivity increases the accuracy of the results.

Results: Any zone of inhibition around the disk is considered sensitive (S). No zone of inhibition with growth up to the disk is considered resistance(R) .

Bacitracin	SXT	Presumptive
S	R	Group A b-streptococci
R	R	Group B b- streptococci
R	S	Not Group A or B b-strep
S	S	Rule out Group A or B with serologic tests

- **Hippurate hydrolysis :-**

Intends use: Aids in the differentiation of B- hemolytic streps. agalactia from other B-hemolytic streps.

It is critical for the identification of campylobacter jejuni

Results: Development of a deep purple color within(5_10)minutes is a positive result.

- **Bile Escolin:-**

Differential media is used for isolating and presumptively identifying group D streptococci.it is also helpful in the differentiation of klebseilla spp, Enterobacter spp, and serratia spp.

Results:

- Appositive result is indicated by a dark brown or black color that diffuses in to half or more of the medium.
- Blackening of less than half of the medium after 48 hours is a negative result.

- **CAMP test :-**

Is an acronym for the author (Christic, Atkinson, Munch, Peterson) . The CAMP factors Reacts with the partially lysed area of blood agar plate to enhance the hemolytic activity .

CAMP test is alest to identify group B β-strep based on ther formation of a substance (CAMP) factor that enlarges the area of hemolysis formed by β-hemolysin from staph.aureus .

Some weakly beta-hemolytic species cause intense beta hemolysis when grown with strains of staph, this called CAMP test .

Uses : 1- it's frequently used to identify Listeria .

2- it can be used to identify Strep.agalactia .