### Title: Comparison of Sugars Fermentation, Generation Time and Hemolysis Pattern in MRSA and MSSA isolates from Personnels and Inpatients in Gorgan Hospitals, North of Iran

**Authors:** Amini A *, Rahimi Alang S, Ghaemi E A

**Abstract:**
Background and objective: The mec A gene in Staphylococcus aureus leads to production of new penicillin-binding protein called PBP2a. This change in the cell wall protein may change some phenotypic properties. The aim of this study was the comparison of sugars fermentation, hemolysis creation and generation time in MRSA and MSSA isolates that carry out during 2010 in Gorgan, Iran.

Material and Methods: Total 188 isolates of S. aureus (61 MRSA and 127 MSSA) separated from inpatients and carriers were evaluated. For evaluation of hemolysis of isolates was used culture in Blood Agar for 24 hours in 37°C and then 4°C. Sugar fermentation performed in Phenol red Broth base media containing glucose, galactose, arabinose, fructose, xylose, rhamnose, mannose, sucrose, trehalose, raffinose or maltose. To determine growth rate, were cultured, up to 12 hours from the concentration of 10^3 bacteria (per hour) in Mueller Hinton Agar and colonies were counted after 24 hours. P<0.05 was use as meaningful.

Results: Hemolysis average diameter in MRSA isolates (10.07 mm) was slightly higher than MSSA (9.55 mm), (P>0.05). Differences between fermentation rates of MRSA and MSSA isolates for rhamnose, trehalose, galactose and xylose were statistically significant (P<0.05). The results showed difference in bacterial division time, between MRSA and MSSA isolates is significant (P=0.01).

Conclusion: Between MRSA and MSSA isolates wasn’t a difference in the diameter and layers of hemolysis. Therefore resistance to methicillin couldn’t create to intervene the ability to hemolysis. Resistance to methicillin is associated with increscent ability to sugars fermentation. This phenomenon may increase pathogenesis in MRSA isolates. Generation time average in MRSA is more than MSSA isolates, that shows the logarithmic phase, is longer in MRSA isolates. This may indicate that production of PBP2a in methicillin resistant isolates is associated with the change in penetration of nutrient, and decrease speed entry will be growth slower.

**Staphylococcus aureus, resistance to methicillin, hemolysis, sugars fermentation, generation time**

**Presentation:** Poster