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Prevalence and drug susceptibility pattern of Group B *Streptococci* among pregnant women attending antenatal care in Nekemte Referral Hospital, Nekemte, Ethiopia

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Background: Maternal colonization with GBS in the genitourinary or gastrointestinal tracts is the primary risk factor for disease. Maternal infections of GBS constitute one of the leading pathogens associated with both early and late-onset neonatal sepsis. The aim of this study was to determine the prevalence and drug susceptibility pattern of Group B *Streptococci* (GBS) among pregnant women.

Materials & Methods: A cross sectional study was conducted in Nekemte referral hospital (NRH) between March and May, 2016 on a total of 180 pregnant women. Vaginal swabs were aseptically collected from each pregnant woman using sterile cotton swabs, inoculated in 1.5 ml Todd Hewitt broth (supplemented with colistin and nalidixic acid) and sub-cultured on 5% sheep blood agar. Gram staining, bacitracin sensitivity test, CAMP test and drug susceptibility tests were performed. Data on socio-demographic characteristics and associated risk factors were collected using structured questionnaires. Cleaned and coded data were analyzed by SPSS software version 20. P value < 0.05 was used as a significance level.

Results: The median age of the participants was 24.5 years (range: 16-38) and 86% participants were urban residents. The total prevalence of maternal GBS colonization from vaginal swab culture was 12.2% (22/180). The prevalence of GBS colonization rate was significantly higher in those pregnant women above 37 weeks of gestation [AOR, 95% CI: 2.1 (1.2, 11.6), P=0.03] and married ones [AOR, 95% CI: 3.2 (1.8, 11.6), P<0.021]. Twenty (91%) of GBS isolates were sensitive to vancomycin and the highest resistance was observed against penicillin G (77.3%).

Conclusion: The prevalence of GBS colonization in this study is significantly high and differed by gestational age and marital status. None of the GBS isolates were resistant to vancomycin but higher resistance was shown against penicillin G. Screening of pregnant women for GBS colonization, large scale longitudinal studies with molecular characterization of GBS in both mothers and neonates is recommended.

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Mycotoxins co-contamination: Methodological aspects and biological relevance of combined toxicity studies

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Mycotoxins are secondary fungal metabolites produced mainly by *Aspergillus, Penicillium* and *Fusarium*. As evidenced by large-scale surveys, humans and animals are simultaneously exposed to several mycotoxins. Simultaneous exposure could result in synergistic, additive or antagonistic effects. However, most toxicity studies addressed the effects of mycotoxins separately. We present the experimental designs and we discuss the conclusions drawn from *in vitro* experiments exploring toxicological interactions of mycotoxins. We report more than 80 publications related to mycotoxin interactions. The studies explored combinations involving the regulated groups of mycotoxins, especially aflatoxins, ochratoxins, fumonisins, zearalenone and trichothecenes, but also the emerging mycotoxins beauvericin and enniatins. Over 50 publications are based on the arithmetic model of additivity. Few studies used the factorial designs or the theoretical biology-based models of additivity. The latter approaches are gaining increased attention. These analyses allow determination of the type of interaction and, optionally, its magnitude. The type of interaction reported for mycotoxin combinations depended on several factors, in particular cell models and the tested dose ranges. However, synergy among *Fusarium* toxins was highlighted in several studies. As a conclusion, well-addressed *in vitro* studies remain valuable tools for the screening of interactive potential in mycotoxin mixtures.

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