

PO138 - EVALUATION OF FECAL INDICATOR BACTERIA (FIB) IN BEACH SAND IN BAIXADA SANTISTA REGION: ON AND OFF-SUMMER SEASON STUDY

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AIMS

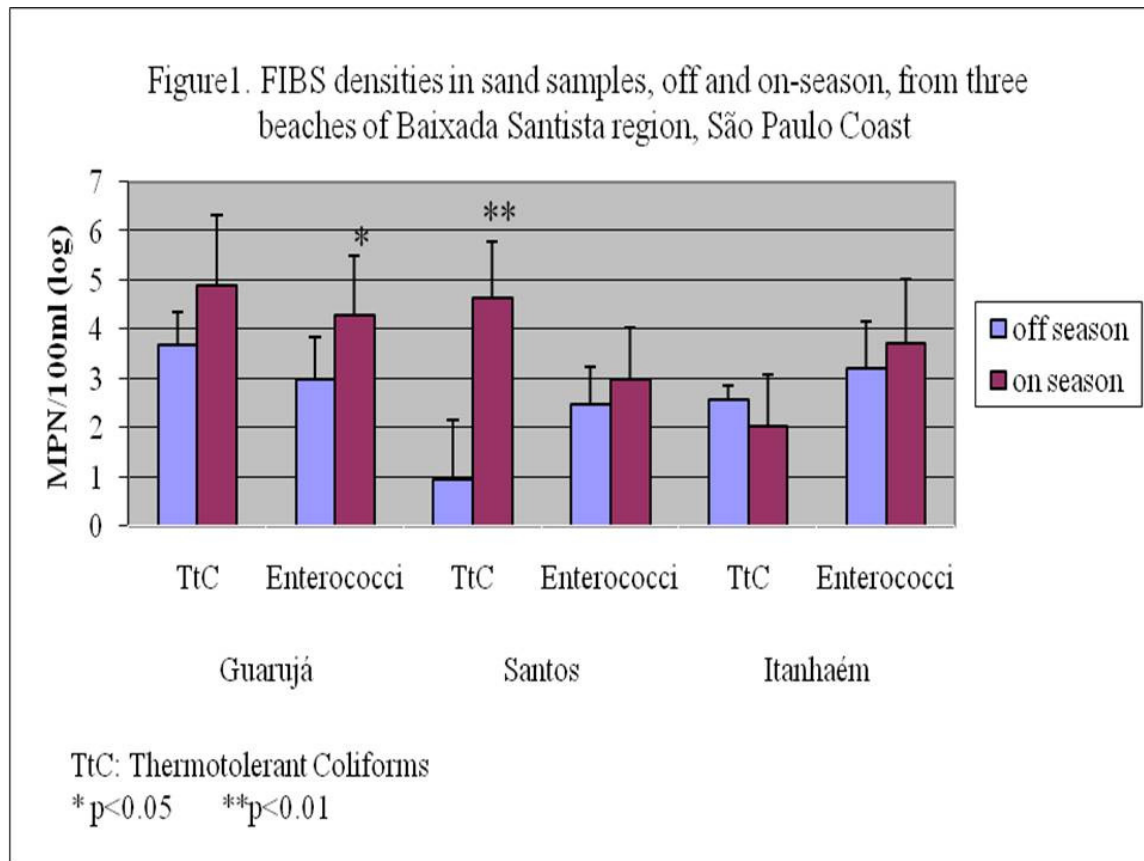
Recreational activities are increasing around the world and due to the large extension of Brazilian coast, they are popular in our country. It is clearly established an association between recreational water quality and health problems, and therefore criteria for monitoring programs of beach waters, through fecal indicator bacteria (FIB) enumeration are worldwide accepted. Recent studies have shown that the beach sand can act as a potential FIB reservoir, and consequently may represent a risk to human health, but despite this the sanitary quality of sand is not included within of routine monitoring programs. The sources of FIB in beach sand are still unclear, but some authors attributed this pollution, among others factors, to municipal sewage treatment plant discharges in close proximity to the beaches, urban runoff, presence of warm-blooded domestic animals, and to increased influx of beachgoers in the summer. Aiming to evaluate the people influx impacts, FIBs were enumerated in sand samples during the months before the summer season (off-season) and in summer (on-season), in the beaches from three cities of the Baixada Santista region, São Paulo State Coast, which are very popular in the summer time.

METHODS

Beach sand samples from Guarujá, Santos and Itanhaem cities were collected in November and in December (off-season months) (n=9), and at January and February (on-season months) (n=9). Dry sand samples were suspended in sterile dilution water to make a 10⁻¹ dilution. The suspension was then blended for two minutes at high speed and appropriate dilutions were immediately prepared to avoid sedimentation. Samples were analyzed by the multiple tube technique according to "Standard Methods" for thermotolerant coliforms using A1 medium (APHA 2012a) and enterococci using azide dextrose broth and bile esculin azide agar (APHA 2012b). The results were submitted to t-Student statistical test to evaluate the differences of FIBs counts in the different seasons.

RESULTS

Figure 1 shows the log mean of FIB density values obtained for off season and on-season sand samples for the three beaches evaluated. The mean values for on-season samples seem to be, higher than those observed for off-season time, however a significant difference was observed only for enterococci concentration values from Guarujá beach ($p < 0.05$) and for thermotolerant coliforms from Santos beach ($p < 0.01$). No significant difference between FIBs concentrations for on-season and off-season samples was observed in Itanhaem beach. These results can be explained by the wide variation in FIB concentrations over the study period, usually because of rainfall, which is very frequent during off-season time.



CONCLUSIONS

An increment on enterococci and thermotolerant coliform densities was verified in all on season sand samples (except for TtC in Itanhaem), showing the impact of high number of tourists during summer in these sites. New studies are required to obtain more consistent statistical data.

REFERENCES

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