ABSTRACT

The second most abundant lignocellulosic biopolymer is hemicellulose consisting of xylan and polysaccharides. For the breakdown of xylan backbone, xylanse has the ability to convert a xylan polymer into oligosaccharides which are further degraded by xylosidase. In this study xylosidase gene from *Bacillus licheniformis* was cloned and expressed in *Eschericia coli*. The recombinant enzyme showed the molecular weight of 58kDa, when purified by affinity chromatography.The optimum temperature was calculated as 55°C while pH was 7.0. The enzyme showed enhanced activity when treated with different metal ions like chlorides of sodium, potassium, magnesium, manganese, cobalt cuprous, cobalt and zinc. SDS (sodium dodecyle sulphate) was considered most powerful inhibitor for the enzyme activity. Both organic solutions, ethanol and methanol also increased the enzyme activity.

Abstract

The present work is focused on evaluation of vitamin A deficiency on the thyroid enlargement in children. For this purpose, 122 children of age 6.5 to 15 yr, that referred by the physician of CENUM, Mayo Hospital Lahore, were selected. Blood samples were collected from all these patients. Among them, 80 were categorized as goitrous (euthyroid) and 42 were non-goitrous (controls) samples through ultrasonography. Thyroid function test was performed for each (122) sample to separate diseased (hypothyroidism & hyperthyroidism) samples. The selected goitrous samples were further tested for TPO-Ab analysis to discriminate simple goitrous from autoimmune goitrous samples. Fifteen children with positive TPO-Ab and 55 with negative TPO-Ab concentration was detected. These 55 (78.5%) TPO-Ab negative children were classified as simple goitrous children, out of 55 children, 30 were randomly selected for vitamin A analysis. The results indicate that 19 (63.3%) children had serum retinol (SR) levels below 20μg/dl and are vitamin A deficient children. While, the remaining 11 (36.7%) children were found to be vitamin A sufficient. The comparison between goitrous and non-goitrous children was done by elucidating the relation of serum FT4 and TSH in both groups, though the only significant difference was seen in the case of FT4 ($p= 0.05$) in both groups. Similarly, the relative incidence of vitamin A deficiency among these groups was also recorded, and the results are independent of low concentration of serum FT_4 and TSH in those children. The vitamin A deficiency analysis in relation to goiter size, family history (FH) and child age by t-test showed that the children with palpable goiter (G1) has a slightly more incidence of vitamin A deficiency (73.6%) as compared to children with visible goiter (G2; 45.4%). Whereas, no role of family history and age was observed among both groups. Consequently vitamin A deficiency was recorded in 63.3% of simple goitrous children and 20% in non-goitrous children irrespective of serum FT_4, TSH, goiter size, family history and child age and showed three times the high incidence as compared to previous studies.