

**SERUM CALCIUM, MAGNESIUM AND PHOSPHOROUS REFERENCE INTERVALS IN A GROUP OF HEALTHY SRI LANKAN ADULTS FROM AMPARA AND KANDY DISTRICTS**

**S. Shiffana<sup>1,2\*</sup> and R. Sivakanesan<sup>3</sup>**

<sup>1</sup>*Postgraduate Institute of Science, University of Peradeniya, Sri Lanka*

<sup>2</sup>*School of Medical Laboratory Technology, Peradeniya, Sri Lanka*

<sup>3</sup>*Department of Biochemistry, Faculty of Medicine, University of Peradeniya, Sri Lanka*

*\*sshiffana@gmail.com*

Reference intervals aid physicians to interpret laboratory results of analytes. Reference ranges may vary depending on age, sex, race, and diet. Since no reference intervals are available for Sri Lankans, a study was initiated to establish reference intervals for serum calcium (Ca), magnesium (Mg) and phosphorus (P).

One hundred and ninety five apparently healthy Sri Lankan adults between 20 to 60 years of age from Ampara [Muslims (64), Tamils (21) and Sinhalese (11)] and Kandy [Sinhalese (80), Muslims (12) and Tamils (7)] districts were recruited for the study. Ethical clearance for the study was obtained from Postgraduate Institute of Science, University of Peradeniya. Ca was measured using O-cresolphthalein complexone method, Mg by xylydyl blue method and P by malachite green method.

Reference intervals established considering 2.5<sup>th</sup> to 97.5<sup>th</sup> percentile for Ca was 7.24 - 10.00 mg/dl, for Mg 1.17-2.24 mg/dl and for P 2.37-5.49 mg/dl. No significant differences ( $p>0.05$ ) were observed between gender and among age and BMI groups in any one of the serum analytes. The mean serum concentrations of Mg and P were significantly ( $p<0.05$ ) higher in subjects from Ampara (Mg, P; 1.68, 3.89 mg/dl) than subjects from Kandy (Mg, P; 1.58, 3.61 mg/dl), but the mean Ca concentration was significantly ( $p<0.05$ ) higher in subjects from Kandy (8.59 mg/dl) than subjects from Ampara (8.34 mg/dl). Therefore, separate reference intervals are proposed for Ampara (Ca, 7.27 - 9.95 mg/dl; Mg, 1.21 - 2.38; P, 2.43 - 5.52 mg/dl), and Kandy (Ca, 7.19-9.95 mg/dl; Mg, 1.13-1.91; P, 2.37-5.25 mg/ dl) districts. Mean concentration of Mg in Muslims (1.72 mg/dl) was significantly ( $p<0.05$ ) higher than Sinhalese (1.55 mg/dl). The mean Mg concentration in Tamils (1.62 mg/dl) showed no significant ( $p>0.05$ ) differences with Sinhalese (1.55 mg/dl) and Muslims (1.72 mg/dl). But mean Ca concentration in Sinhalese (8.62 mg/dl) was significantly ( $p<0.05$ ) higher than Muslims (8.36 mg/dl) and Tamils (8.23 mg/dl), but Ca in Tamils (8.23 mg/dl) showed no significant ( $p>0.05$ ) difference with Muslims. P showed no significant ( $p>0.05$ ) differences among races.

The mean value of Ca and Mg reported from Hong Kong, North India, Basra and Singapore are higher than the results of the present study, possibly because of differences in the test procedure, dietary habits, life styles and ethnicity. Hence, we conclude that each country should try to establish reference intervals that are representative of local populations.