

Recent advancements in molecular pathogenesis

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To optimize treatment, we need to understand biology of different diseases in much more detail with emphasis on morphological, proteomic, genetic and epigenetic grounds. Keeping in view the facts and stimulating developments in molecular pathology, it is worthwhile to present an up-date on this topic. It is becoming progressively more understandable that exciting fields of pharmacogenomics and pharmacogenetics have revolutionized field of medicine. Better understanding of underlying mechanisms of different diseases has provided us with better ways to treat illnesses. There cannot be a distinct definition of 'discipline' of pathology, mainly because investigation of human disease encompasses all the scientific disciplines of biomedical research.

Sen *et al* reported that hyperbaric oxygen (HBO) administration affected the endocrinological functions of fat tissue. Observation of significant increases in leptin, visfatin and IL-10 levels, leads to the consideration that in near future HBO administration may be applied as treatment for obesity, DM, eating disorders and obesity related diseases.

Erbag *et al* found that betatrophin levels in Polycystic Ovary Syndrome (PCOS) patients were considerably lower as compared to control group. They also identified a significant negative correlation between betatrophin level and insulin, BMI, and HOMA-IR level. They concluded through multiple regression analyses that PCOS may be the only factor having an effect on the decline of betatrophin level.

Kucukhuseyin *et al* provided information about a study related to advanced glycation end products (AGE) and their interaction with their receptors (RAGE) in obesity. The authors suggested that SerSer genotype could have significant effects on sRAGE levels, and increased sRAGE levels and Gly82Ser polymorphism either combinatorially or separately increased the propensity towards obesity.

Coskun *et al* studied possible associations between MnSOD and GPx1 gene variants for laryngeal cancer risk or disease progression in Turkish population. Authors indicated that frequency of both heterozygous PL genotype and P allele was considerably higher in patients with advanced tumor stage (T3/T4) than in those with early tumor stage (T1/T2). Although, frequency of ValVal/LL combined genotype was significantly reduced, the frequency of ValAla/PL combined genotypes was notably higher in patients with stage T3/T4 as compared to patients with stage T1/T2.

Qureshi *et al* reviewed most recent literature on negative regulators of TGF mediated intracellular signaling in cancer progression and development.

Maqsood *et al* demonstrated that Mesenchymal Stem Cells (MSCs) co-cultured with keratinocytes worked with effective synergy and considerably regenerated damaged skin when transplanted to damaged area. Mirahmadi *et al* reported that SDF-1 α over-expressing cells may be used in damaged tissues to obtain enhanced stem cell recruitment and implantation. SDF-1 α upregulation was triggered using different strategies.

Sehitoglu *et al* experimentally verified that glycyrrhizic acid treatment reduced oxidative stress and inflammation and promoted neuronal functions in traumatic spinal cord injury. Salahuddin *et al* also studied plant extracts mediated effects on cancer cell line.

Smina *et al* also investigated natural products induced effects in preclinical models. Research group reported that *Ganoderma lucidum* triterpenes significantly inhibited Dalton's lymphoma ascites (DLA) and Ehrlich's ascites carcinoma (EAC) tumors in Swiss albino mice.

In conclusion, the thematic issue provided information related to most recent advancements in molecular pathology and different strategies to treat different pathological conditions.