Seven genotypes of durum wheat (*Triticum turgidum* L. var. *durum*) were cultured to identify an efficient medium for induction of embryogenic callus formation from immature embryos for biolistic-mediated transformation. The immature embryos were placed in petri dishes containing different induction media (M1, M2, M3, M4 and M5). All the media induced embryogenic callus, except, the medium 2, which produced brown callus in all the varieties. M3 medium induced very low frequency of embryogenic callus. However, the embryogenic callus derived from these media gave low regeneration frequency, when cultured on the regeneration medium, except for the M3. The M3 media was further amended with additions of vitamins, sucrose and 2,4-D with different combinations and generated five additional media (M6 to M10). Upon testing these new media for embryogenic callus induction and regeneration, M6 and M8 were found to be very efficient in inducing embryogenic callus. These two media are being used for induction of embryogenic callus for biolistic transformation of durum wheat.

One of the major obstacles of *in vitro* culture in wheat is its low efficiency of plantlets regeneration. It is known that the yield of callus and somatic embryos depends on the composition of the medium and explants sources, namely immature embryos and mature embryos. The regeneration efficiency also depends on genotype and age of embryos. In this study, we used mature and immature embryos as explants from four bread wheat varieties, The embryos were placed in petri dishes containing different induction media (M1, M2, M3, M4 and M5) to define culture conditions suitable for obtaining high frequencies of somatic embryogenesis and plant regeneration *in vitro* and compare results between mature and immature embryos in order to use mature embryos as a source of explant because it is a best alternative to save time and costs. All the media induced embryogenic callus, except, the medium 2, which produced brown callus with mature and immature embryos in all varieties. The results showed a differential response of media and varieties in their ability to induce embryogenic callus. For higher frequency of embryogenic callus induction and plantlet regeneration, the medium 1 is favorable for bread wheat varieties ‘Aguial’, ‘Mehdia’ and ‘Achtar’; medium 3 is favorable for ‘Aguial’, ‘Arrehane’, ‘Mehdia’ and ‘Achtar’. The experiments on regeneration using immature embryos as explants are currently in progress and they are at callus stage. The variety specific media are being used for somatic embryogenesis, as an integral part of wheat transformation process to improve drought tolerance by incorporating a late embryogenesis abundant gene.