

DKW emerges as a superior media factor in *in vitro* plant regeneration

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Plant regeneration heavily depends on the basal media factor. Recent studies showed the potential role of Driver and Kuniyaki Walnut (DKW) medium as an alternative to popular MS medium. In these studies, DKW distinctly depicted superiority over MS medium in terms of multiple shoot induction and callus mediated shooting of *C. ternatea* and *B. australis*.

Earlier reports also claimed, the successful regeneration studies of *Pimpinella pruatjan*, *Theobroma cacao*, *Manihot esculenta* Crantz, *Corylus avellana*, *Juglans regia*, *Juglans nigra* with a high percentage of germination and plantlet conversion in DKW medium. The disparity between DKW and MS media is mostly in their macronutrients composition, but the solidifying agent Gelrite in DKW is also assumed to be a key factor to separate them in terms of success.

Key Words: Plant regeneration, DKW, Gelrite

INTRODUCTION

Plant regeneration studies have discovered many biotic and abiotic influencing factors [1]. The most important of them may be the basal media factor. MS media [2] is the most popular due to its efficiency [3], but a recent study also divulged the potential of another medium Driver and Kuniyaki Walnut (DKW) [4] once again. In this study, DKW delineated superiority over MS medium in terms of multiple shoot regeneration, and callus mediated shooting of *C. ternatea* by highest 73.33% regeneration on both occasions, against 66.67% response [5]. The study was supported by the higher multiple shoot induction from apical buds (highest 100% DKW+ five different conc. of BA and iron as FeEDDHA; 88% MS+8.8 μ M BA) and nodal segments (highest 100% DKW+ four different conc. of BA and iron as FeEDDHA; 94% MS+4.4 μ M BA) of *B. australis* in DKW compared to MS [6]. Additional micronutrients or extra vitamins in DKW may be the decisive factor according to the author.

Before that, Deng and Cornu reported 45% walnut somatic embryo germination to plantlet in an earlier study [7]. Somatic embryogenic regeneration study of *Pimpinella pruatjan* also showed an increased number regenerated explants [8]. Contemporary cacao (*Theobroma cacao* L.) regeneration also showed high percentage successful somatic embryo formation (5.6-66.7%), germination (50%) and plantlet conversion (65%) in DKW medium supplemented with kinetin [9]. Nigerian cassava (*Manihot esculenta* Crantz) regeneration was moderately successful with mixed results varied from primarily 10-80% and 49-78% in further screening [10]. Nutrient modification in DKW resulted in better micropropagation growth for hazelnut (*Corylus avellana* L.) [11]. Introduction of Ni in the medium altered other nutritional requirements.

As a high salt basal medium DKW differs from others in the components of chemical macronutrients or minerals [12]. And found superior [13] than other media for shoot multiplication of Persian walnut (*Juglans regia* L.) [14] and *Juglans nigra* L. (black walnut) [15].

It can be postulated the solidifying agent Gelrite in DKW play a vital role to obtain supremacy over other basal media [16,17]. The *Sphingomonas elodea* produced polysaccharide ensure the decreased use of agar [18,19] and showed enhanced cytokinin sensitivity in bud formation of *Physcomitrella patens* (Moss) [20]. But, the hypothesis on better performance of DKW required being strengthened by supportive results of more regeneration studies on different species.

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CONFLICT OF INTEREST

The author declares that there is no conflict of interest exists.

ETHICS OF HUMAN AND ANIMAL EXPERIMENTS

Not applicable.

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