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ASCORBIC ACID LEVELS IN THE AMNIOTIC FLUID, CORD BLOOD, MATERNAL BLOOD AND NEWBORN URINE AT DIFFERENT GESTATIONAL PERIODS

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DURING the last three decades only the dynamic nature of amniotic fluid is studied. Different constituents are studied in amniotic fluid like electrolytes, excretory products, enzymes, hormones, amino acids and phospholipids[1]. However, very few studies have been carried out on amniotic fluid vitamins. Corti and Murmori[2] found elevated vitamin A and carotene in amniotic fluid from the mothers of postmatured foetuses. Clarke[3] reported elevation of amniotic fluid vitamin B_{12} and folate levels in cases of severe toxemia associated with intrauterine deaths. Ostergard[1] noted that ascorbic acid concentrations were almost the same in amniotic fluid and maternal blood near term. However, no data are available on the ascorbic acid levels at different gestational ages.

Amniotic fluids of 129 normal pregnant women from S.S.G. Hospital, Baroda, were studied. They were mainly from middle and low socio-economic group. Their gestational ages varied between 8–40 weeks. The amniotic fluids were collected by suction, amniocentesis or artificial rupture of membrane. Suction and amniocentesis were performed in the women who desired abortion. For all the subjects included in the study, a previous written consent was taken before collecting amniotic fluid for ethical reasons. Out of 129 subjects, 15 subjects of 37–40 gestational weeks were also studied for their corresponding cord blood, maternal blood and newborn urine. The cord blood was collected from the placental side of the severed umbilical cord without squeezing it and maternal blood was collected within 30 minutes of delivery from the peripheral vein. The newborn urine was collected within two days of birth using urine collecting bags. All the fluids were collected in plain bulbs. In the cases of amniotic fluid and urine, they were first centrifuged, filtered and then analyzed. Ascorbic acid concentration was determined by dinitrophenylhydrazine method[4]. Within 2–3 hr of collection of fluids, their protein was precipitated by 6% trichloroacetic acid, the protein-free filtrates were treated with norite, filtered and stored in the deep freeze. Further process was continued within a week.

TABLE 1

*Ascorbic acid concentrations in amniotic fluid, cord blood, maternal blood and newborn urine (mg/dl)**

	Amniotic fluid							Cord blood	Maternal blood	Newborn urine
Gestational weeks	8–15	16–17	18 19	20 21	22-25	34–36	37 40	During 37–40 weeks		
	0.50	0.58	0.59	0.63	0.68	0.80	0.66	0.84	0.62	5.23
	± 0.36	0.32	± 0.35	± 0.39	± 0.37	± 0.44	± 0.60	± 0.57	± 0.61	± 4.19
	(5)	(12)	(25)	(35)	(10)	(6)	(36)	(14)	(12)	(15)

Mean, ± Standard Deviation; Figures in bracket give number of observations.

The subjects were divided into seven gestational age groups as shown in the table 1. With gestation there was an increase in the ascorbic acid concentration in amniotic fluid The difference between 8-15 weeks and 37-40 weeks amniotic fluid ascorbic acid levels was significant ($P < 0.01$), when Wilcoxon Rank sum Test[5] of non-parametric technique was applied. There was not much difference between amniotic fluid and maternal blood levels which was also reviewed by Ostergard[1]. In cord blood the concentration was higher and in newborn urine it was highest amongst the four-body fluids studied.

It is difficult to explain the continuous increase in amniotic fluid. As the gestation proceeds the amniotic fluid becomes urine-like, *i.e.* more concentrated waste products like urea, uric acid and creatinine and diluted useful constituents like protein and sodium[1]. Though ascorbic acid is an essential constituent, its concentration showed increase with the gestation. It might be possible that due to the active transport of ascorbic acid, as suggested by Latner[6], its concentration in amniotic fluid would increase with increased need for foetal growth. It is being indicated that placenta can synthesize ascorbic acid[7]; so with the growth of placenta the amount synthesized will increase and this will be reflected in the increase of amniotic fluid ascorbic acid concentration. Under the physiological stress of pregnancy it is possible that ascorbic acid might be synthesized as observed by Odomosu and Wilson[8] in guinea pigs. It would be interesting to test foetal kidney and liver organs for the possible site of ascorbic acid synthesis.

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CHANGES IN THE OVARIES OF IMMATURE INFLORESCENCE OF PEARL MILLET CULTURED *IN VITRO*

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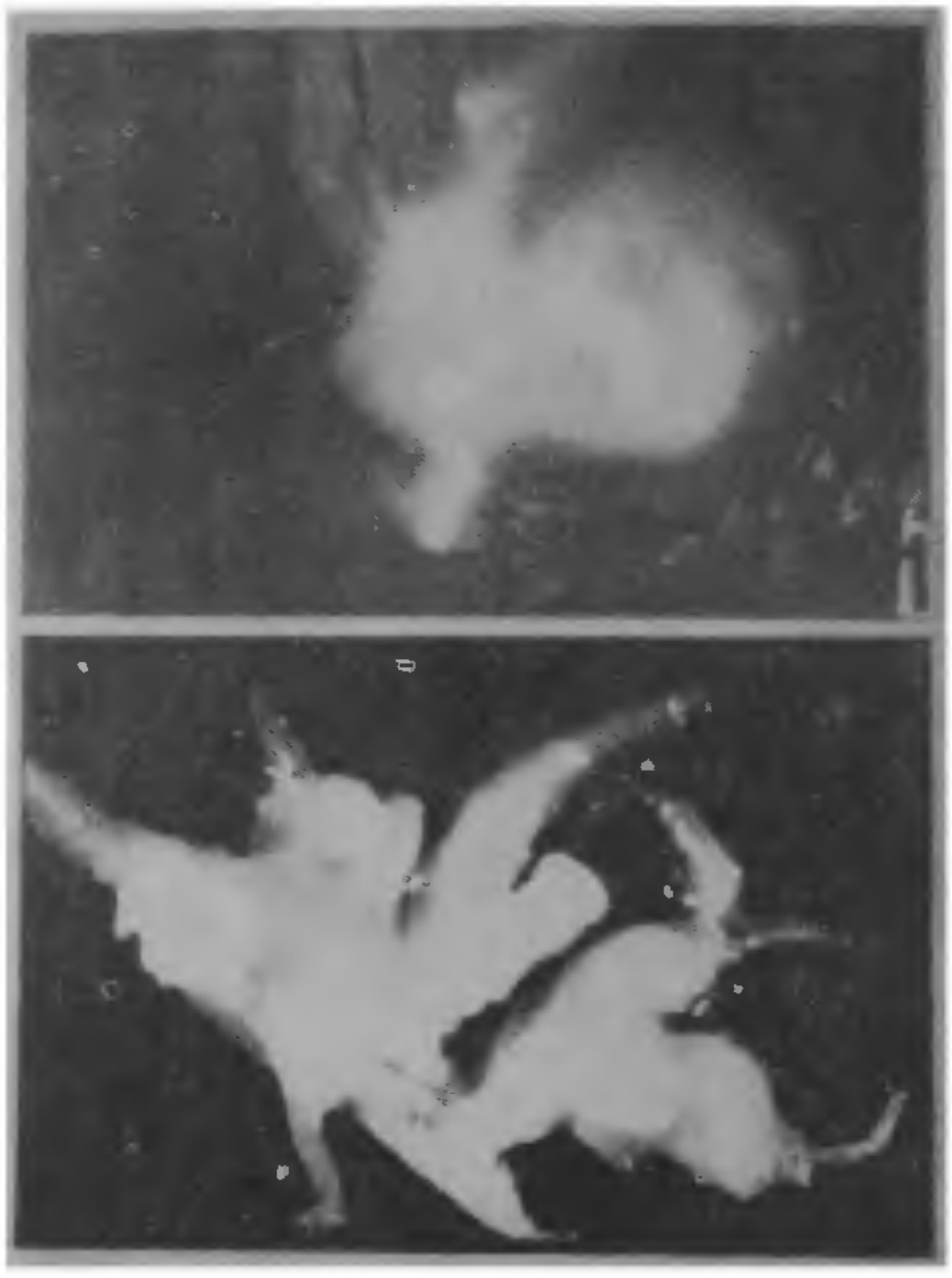
RECENT advances in plant tissue and cell culture have led to much speculation about the ways in which a cereal species might be manipulated using *in vitro* technology. Accordingly, there has been an upsurge of research in tissue culture, and various parts like immature and mature embryos, germinated seedling parts, stem bits, roots and leaves, sometimes the endosperm have been used as sources of the experimental inocula. But a literature survey indicated that the introduction of immature inflorescence as the source of inoculum in the field of tissue culture is quite recent.



Figures 1, 2. 1. Protruberance from the ovary part in a floret. × 20 **2.** Spikelet on MS + NAA (2 ppm) showing root formation from the base of the ovary. × 120