PARTITION OF PROTEIN FROM SEA URCHIN: DIADEMA SETOSUM IN DIFFERENT SALTS.

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INTRODUCTION

Sea urchins are classified in the Phyllum, Class, and Order of Echinodermata, Crinoidea and Regularia. They have radially symmetrical bodies made of calcareous plates, Arnold (1968); Clark and Rowe (1971) and are exclusively bottom-living, occuring both on hard and soft bottom, Ebert (1982); George and Jennifer (1979). Some species of sea urchins e.g. *Heliocidaris erythrogramma, Tripneustes gratilla* and *Pneustes ventricosus* are used as food in some parts of the world such as, Japan, Australia, Korea and Barbados, Jones and Endean, (1976). Some species of sea urchins are poisonous e.g. *Toxopneustes pileolus, Diadema setosum.*

Immers (1961b) and Ficg (1964) studied the protein synthesis of the female sea urchins. Iwata and Nakano (1981) and Miyachi et al (1984), have been working on protein of sea urchin characterization.

In this work protein partition by using different salts is investigated.

MATERIALS AND METHODS

Sea urchins were picked up by hand at K.M.F.R.I. station and stored at -10C to preserve them until it was convenient to dissect them.

The frozen samples were thawed at room temperature. The globiferous pedicellariae muscles and spine stalks, removed and put into another bottle with broken glasses in 0.1M sodium phosphate buffer 7pH. The bottle then shaken hard to remove and break off the flesh into smaller pieces. The particles were sieved off by 300M sieving mesh. 300 ml. of protein solutions then stored at-2 C.

25 ml. of protein solutions were divided into five test tubes, 5 ml; in each test tube and salts added (table 1)

The samples were left overnight at room temperature. The protein partition were observed the following day.

Table I. protein solutions with different salts.

Test tube	Grams of salts added	Salts
1	10	$(NH_4)_2SO_4$
2	10	Na_2SO_4
3	10	$Na_2S_2O_3\ 5H_2O$
4	10	$NaNO_2$
5	10	$NaCO_3$

RESULTS AND DISCUSSION

The protein partition by different salts are compared (fig 1) As may be seen from this table, the higher the molecular weight of the salts, higher the partition required for protein. Generally it might be expected that, the higher the molecular weight of the salts used, the higher the separation. This increase in concentration due to greater molecular weight is, however partly salts with higher molecular weight are required for protein partitions Albertsson (1960). This systems in test tubes 1, 2 and 3 have high top partition.

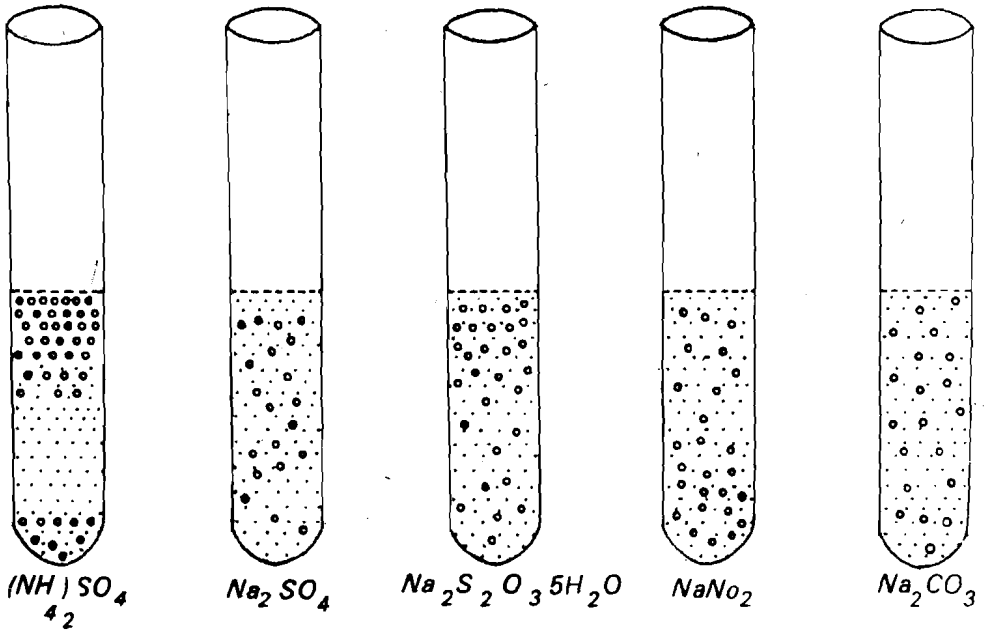

Fig 1 Protein partition in different salts

Influence of shaking: The salt particles were allowed to distribute by their own thermal motion. To achieve solubility quickly the systems were shaken, so that a close contact between the salt and protein molecules is obtained within a short time. During shaking the particles may be subjected to various mechanical forces supplying them with kinetic energy in addition to that of the thermal motion.

The time required for the protein to partition was the same. It depends not only on the difference in density between the proteins, but also on the time needed for the small droplets, formed during shaking to coalesce into larger drops. The settling time therefore slow in all.

Protein partition in mixture depends highly on both the ionic strength and the kind of ions present, Albertsson (1960). Thus, the mixture in low molecular weight salt show high turbidity, most of protein showing high dielectric constant values.

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