

### **SDA ( SPECIFIC DYNAMIC ACTION OF FOOD)**

- During digestion and assimilation of food, the energy produced is converted into heat . Ingested foods increase the metabolic rate because of their specific dynamic action (SDA).The SDA of a food is the obligatory energy expenditure that occurs during its assimilation into the body. i.e. SDA is the phenomenon of the extra heat production by the body over and above the calculated caloric value when a given food is metabolized by the body.
- The metabolic rate and thus, heat production increases by about 15% after a meal, starts within one hour of taking food, becomes maximum in about third hour. This is called specific dynamic action (SDA) of food or thermic effect of food or calorogenic action of food lasts for several hours .
- SDA of foods is due to the energy required for digestion, absorption, transport, metabolism and storage of foods in the body
  1. SDA of protein : mainly to meet the requirements for deamination, synthesis of urea, biosynthesis of proteins etc.
  2. SDA of carbohydrate : for the conversion of glucose to glycogen
  3. SDA of fat : for its storage, mobilization and oxidation
- SDA is different for different foodstuffs, maximum for protein. Therefore, ingestion of protein rich food has more SDA value (30%) than carbohydrate (6%), fat (12%) and mixed diet (10%). It takes 30 kcal to assimilate the amount of protein sufficient to raise the metabolic rate 100 kcal, 6 kcal, 12 kcal and 10 kcal to assimilate a similar amount of carbohydrate, fat and mixed food, respectively .

e.g. when 25 gm. protein is utilized in the body, 130 kcal of heat is liberated, instead heat production from the caloric value of 25 gm. of protein is 100 kcal (25 x 4 kcal, as protein provide energy 4 kcal per gm.). This extra 30 kcal is the SDA of protein.

- So people living in hot climate should avoid protein food and they, who live in cold climate are recommended protein food (which helps to maintain the body temperature, liberating extra heat).
- BMR of a subject should be determined avoiding the period during which SDA develops.
- While prescribing adequate diet, proper allowance should be given for the SDA of food, specially of proteins, otherwise tissue substances will burn and the subject will lose weight.