

# Studies on some physical and thermal properties of anna apple cultivar

Abdul-Mohsin Sabah Soliman

Apples are considered as one of the most popular fruits for a large sector of consumers overall the world, even their incomes are different. Regarding to the fast expansion of the cultivated area with Anna apple in Egypt. The production was multiplied more than one time during the tenth years ago, subsequently Anna apple cultivar had been selected to be the material of this investigation. The current investigation was carried out to evaluate some chemical and physical properties of Anna apple pulp, effect of extraction temperature on the rheological parameters of Anna apple pulp, effect of freezing and frozen storage on the rheological parameters of Anna apple pulp which was extracted at 85°C and stored in cold room at —18 to —24°C for one year. The current study was subjected to the following points during the investigation. 1. To evaluate some chemical and physical properties of lab extracted Anna apple pulp. 2. To study the relationship between polyphenol oxidase activity and the different extraction temperatures in order to fix the optimum temperature needed to inactivate this enzyme which responsible about undesirable changes. 3. To study the effect of temperature on the flow behaviour by applying Arrhenius equation on obtained data at Summary 155 different temperature (9.9 — 30°C) at shear rate equivalent to 2 rpm and calculating the activation energy. 4. To evaluate the rheological behaviour of the extracted Anna apple pulp by applying different flow models (Bingham, IPC Paste and Power Law). 5. To study the effect of freezing and frozen storage on the rheological behaviour of Anna apple pulp during the freezing storage period (12 month) by applying the different flow models (Bingham, 1PC Paste and Power Law). 6. To prepare ten blends of baby food which are composed mainly from the Anna apple pulp and sensory evaluate them to select the best five blends which were kept on shelf and evaluated from the stand point of rheology, chemistry and bacteriology. 7. To estimate the heat parameters by using heat penetration data which obtained during the thermal process at lab for the five baby food blends which were bottled in Jars (425x50 mm). 8. To evaluate the carried out thermal process for the bottled baby food blends using the reviewed thermal parameters of pectin methyl esterase (PME). 9. To evaluate of the optimum thermal process time for the selected baby food blends by using the reviewed thermal parameters of pectin methyl esterase. 10. To construct schedule table for the optimum thermal process time at different initial and retort temperatures.