

## Abstract

Mango seed almond fat (MAF) has received attention in recent years due to the resemblance between its characteristics and those of CB. It is one of only six vegetable fats which are allowed to be used for up to 5% in chocolate. Mangoes (*Mangifera indica* L.) are one of Thailand's most economically important fruit. In this research, fatty acid (FA) and triglyceride (TG) compositions, physicochemical characterization, thermal properties and crystallization behavior of the oils extracted from seed kernels of four varieties of Thai mangoes: Keaw–Morakot (KM), Keaw–Sawoey (KS), Nam–Dokmai (ND) and Aok–Rong (AR), were characterized. The results showed that mango almond seeds from the four varieties contain about 6.40, 5.78, 5.73 and 7.74 % (dry basis) of oil for KM, KS, ND and AR, respectively. FA content was determined by GC–FID and it was found that all four cultivars had oleic, stearic, and palmitic acids as the main FA components. TG was determined by HPLC–DAD and the result showed all mangoes comprised mainly of POP, SOO, POS and SOS. The mangoes exhibited significantly different physicochemical properties ( $p < 0.05$ ). ND has the highest melting temperature followed by KS, KM and AR. This means that when the fats from different mango varieties are added to chocolate, the characteristics and the sensory properties of the chocolate will be different as a result of this. During isothermal crystallization at 20°C, ND displayed the highest crystallization constant followed by KS, KM and AR. The growth mechanism and crystal morphology were also different, as can be seen from the Avrami parameter and the polarized light microscope study. The x-ray diffraction analysis showed that the crystal polymorphs of the fats from the four mango varieties were the mixture of various crystalline forms ( $\beta'$ , pseudo- $\beta'$  and  $\beta$  forms), but mostly in the  $\beta'$  form.