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# DAFTAR PUSTAKA

Abualsunun, W., Alahmadi, A.A., Eshmawi, B.A., Ahmed, O.A.A., Sirwi, A., Elfaky, M.A., *et al.* 2025, Optimized quercetin-loaded glycerohyalurosome hydrogel: an innovative nanoplatform for enhanced wound healing, *Future Journal of Pharmaceutical Sciences*, **11**(1):56.

Addo, R.A.B., Gyamfi, A., Boadi, N.O., Laryea, M.K., Badu, M. and Borquaye, L.S. 2025, Nanoemulsion encapsulation improves the stability and antibacterial efficacy of orange (*Citrus x sinensis*) peel essential oil, *Discover Chemistry*, **2**(1):292.

Afrokh, M., El Mehrach, K., Chatoui, K., Ait Bihi, M., Sadki, H., Zarrouk, A., *et al.* 2024, Quality criteria, chemical composition and antimicrobial activity of the essential oil of *Mentha suaveolens* Ehrh., *Heliyon*, **10**(7):e28125.

Ajayi, T.O., Poka, M.S. and Witika, B.A. 2024, Formulation and optimisation of bedaquiline nanoemulsions for the potential treatment of multidrug-resistant tuberculosis in paediatrics using quality by design, *Scientific Reports*, **14**(1):31891.

Akacha, B.B., Kačániová, M., Kukula-Koch, W., Verde, S.C., Madureira, J., Koch, W., *et al.* 2026, Optimizing essential oil blends by mixture design approaches for enhanced antimicrobial and antioxidant activity: a review, *Journal of Food Science*, **91**(1):e70794.

Akhter, A., Shirazi, J.H., Khan, H.M.S., Hussain, M.D. and Kazi, M. 2024, Development and evaluation of nanoemulsion gel loaded with bioactive extract of *Cucumis melo* var. *agrestis*: a novel approach for enhanced skin permeability and antifungal activity, *Heliyon*, **10**(15):e35069.

Alderees, F., Akter, S., Mereddy, R. and Sultanbawa, Y. 2022, Formulation, characterization, and stability of food grade oil-in-water nanoemulsions of essential oils of *Tasmannia lanceolata*, *Backhousia citriodora* and *Syzygium anisatum*, *Journal of Food Safety*, **42**(5):e13001.

Algahtani, M.S., Ahmad, M.Z. and Ahmad, J. 2022, Investigation of factors influencing formation of nanoemulsion by spontaneous emulsification: impact on droplet size, polydispersity index, and stability, *Bioengineering*, **9**(8):384.

Almeida, R.N., Costa, P., Pereira, J., Cassel, E. and Rodrigues, A.E. 2019, Evaporation and permeation of fragrance applied to the skin, *Industrial & Engineering Chemistry Research*, **58**(22):9644–9650.

Al-Otaibi, W.A. and AlMotwaa, S.M. 2023, Preparation, characterization, optimization, and antibacterial evaluation of nano-emulsion incorporating essential oil extracted from *Teucrium polium* L., *Journal of Dispersion Science and Technology*, **44**(6):922–932.

UNIVERSITAS
GADJAH MADA
**Pengembangan Parfum Berbasis Nanoemulsi dengan Senyawa Volatil Gama Melon Parfum**
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**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Ananingsih, V.K., Pratiwi, A.R., Soedarini, B. and Putra, Y.A.S. 2024, Formulation of nanoemulsion parijoto fruit extract (*Medinilla speciosa*) with variation of Tween stabilizers, *Frontiers in Nutrition*, **11**:1398809.

Andriot, I., Septier, C., Peltier, C., Noirot, E., Barbet, P., Palme, R., *et al.* 2024, Influence of cheese composition on aroma content, release, and perception, *Molecules*, **29**(14):3412.

Antonova-Nedeltcheva, D., Dobreva, A., Gechovska, K. and Antonov, L. 2025, Volatile compounds profiling of fresh *R. alba* L. blossom by headspace-solid phase microextraction and gas chromatography, *Molecules*, **30**(15):3102.

Asikin, Y., Nakaza, Y., Oe, M., Kaneda, H., Maeda, G., Takara, K., *et al.* 2024, Volatile component composition, retronasal aroma release profile, and sensory characteristics of non-centrifugal cane sugar obtained at different evaporation temperatures, *Applied Sciences*, **14**(24):11617.

Babu, S., Garza, J., Kumar, R. and Talavera, M.J. 2025, Sensory optimization of Peruvian lucuma fruit ice cream using I-optimal mixture design, *Applied Food Research*, **5**(1):100807.

Bahloul, B., Ben Bnina, E., Hamdi, A., Castillo Henríquez, L., Baccar, D., Kalboussi, N., *et al.* 2024, Investigating the wound-healing potential of a nanoemulsion-gel formulation of *Pituranthos tortuosus* essential oil, *Gels*, **10**(3):155.

Bartnik, M. 2023, GC-MS analysis of essential oil and volatiles from aerial parts of *Peucedanum tauricum* M.B. during the phenological period, *Separations*, **10**(9):484.

BenJemaa, M., Rahali, F.Z., Falleh, H., Beji-Serairi, R., Megdiche-Ksouri, W., Hamrouni, I., *et al.* 2022, Essential oil stabilisation by response surface methodology (RSM): nanoemulsion formulation, physicochemical, microbiological, and sensory investigations, *Molecules*, **27**(21):7330.

Betancur, A.Z., Longas, F.F. and Diaz, A.P. 2026, Formulation by design: multiobjective optimization of a synergistic essential oil blend with bioactivities for skin healing applications, *Applied Biosciences*, **5**(1):18.

Bhattacharjee, S. 2016, DLS and zeta potential – what they are and what they are not?, Journal of Controlled Release, 235:337–351.

Bienhaus, M., Neumann, L., Müller, C. and Runkel, F.E. 2025, Targeted development of an optimised formulation for 3D-printing of a sertraline hydrochloride-containing drug delivery system with immediate-release characteristics utilising a mixture design, *Pharmaceutics*, **17**(9):1137.

Bolgen, U.M.G., Demirci Kayiran, S., Ozogul, Y. and Ozogul, F. 2025, Essential oil-based nanoemulsions with current knowledge: formulation, characterization, and applications in food and pharmaceuticals, *Industrial Crops and Products*, **233**:121411.

UNIVERSITAS
GADJAH MADA
**Pengembangan Parfum Berbasis Nanoemulsi dengan Senyawa Volatil Gama Melon Parfum**
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**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Badan Pengawas Obat dan Makanan Republik Indonesia. 2022, *Peraturan Badan Pengawas Obat dan Makanan Nomor 21 Tahun 2022 tentang Tata Cara Pengajuan Notifikasi Kosmetika*, Jakarta, Badan Pengawas Obat dan Makanan Republik Indonesia.

Badan Pengawas Obat dan Makanan Republik Indonesia. 2024, *Peraturan Badan Pengawas Obat dan Makanan Nomor 16 Tahun 2024 tentang Batas Cemaran dalam Kosmetik*, Jakarta, Badan Pengawas Obat dan Makanan Republik Indonesia.

Brooks, S.G., Mahmoud, R.H., Lin, R.R., Fluhr, J.W. and Yosipovitch, G. 2025, The skin acid mantle: an update on skin pH, *Journal of Investigative Dermatology*, **145**(3):509–521.

Badan Standardisasi Nasional. 1998, *SNI 16-4949-1998: Sediaan Eau de Cologne, Eau de Toilette, Eau de Parfum*, Jakarta, Badan Standardisasi Nasional.

Campolo, O., Giunti, G., Laigle, M., Michel, T. and Palmeri, V. 2020, Essential oil-based nano-emulsions: effect of different surfactants, sonication and plant species on physicochemical characteristics, *Industrial Crops and Products*, **157**:112935.

Carranza, K., Rodriguez, C., Esenarro, D., Veliz, M. and Arteaga, J. 2020, Sensory evaluation of a perfume made of orange essential oil, *International Journal of Chemical Engineering and Applications*, **11**(4):89–92.

Cebi, N., Arici, M. and Sagdic, O. 2021, The famous Turkish rose essential oil: characterization and authenticity monitoring by FTIR, Raman and GC-MS techniques combined with chemometrics, *Food Chemistry*, **354**:129495.

Çelebi, Ö., Fidan, H., Iliev, I., Petkova, N., Dincheva, I., Gandova, V., *et al.* 2023, Chemical composition, biological activities, and surface tension properties of *Melissa officinalis* L. essential oil, *Turkish Journal of Agriculture and Forestry*, **47**(1):67–78.

Cen, K., Zhao, Q., Lin, K., Li, X., Wang, C., Li, C., *et al.* 2026, Grapefruit peel essential oil nanoemulsion: formulation optimization, physicochemical characterization, environmental stability, and application in strawberry preservation, *LWT*, **242**:119100.

Chakira, A., Soria, C., Lallemand, L., Mares, G., Chillet, M. and Garcia, C. 2025, Improving the quality of ylang-ylang essential oils [*Cananga odorata* (Lam.) Hook.f. & Thomson] through microwave-assisted extraction compared to conventional extraction methods, *Plants*, **14**(20):3217.

Chatzidaki, M.D. and Mitsou, E. 2025, Advancements in nanoemulsion-based drug delivery across different administration routes, *Pharmaceutics*, **17**(3):337.

Chen, C., Sheng, M., Yuan, H., Pan, X., Tian, H. and Lou, X. 2025, Perceptual interaction of aroma compounds and their effects on the enhancement of flavor quality in foods: a review, *Trends in Food Science & Technology*, **165**:105315.

UNIVERSITAS
GADJAH MADA
**Pengembangan Parfum Berbasis Nanoemulsi dengan Senyawa Volatil Gama Melon Parfum**
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**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Chen, C., Zhou, Q., Tian, T., Yu, H., Xu, Z., Tian, H., *et al.* 2024, Interactions among key aroma compounds and the influence of taste substances on aroma perception in Gouda cheese, *LWT*, **207**:116670.

Chen, J., Ling, L. and Zhang, C. 2024, D- and A-optimal designs for multi-response mixture experiments with qualitative factors, *Communications in Statistics - Theory and Methods*, **53**(15):5593–5611.

Chen, L., Khatri, P.K., Paolini, M., Nardin, T., Roncone, A., Larcher, R., *et al.* 2025, Authentic aroma and compound-specific isotope ratios (δ13C, δ2H) profiles of vanilla pods (*V. planifolia* and *V. tahitensis*), *Molecules*, **30**(4):825.

Chen, Y., Zhao, R., Jiang, G., Liu, G., Cao, Y., Ye, X., *et al.* 2025, Aroma release and consumer perception during cider consumption, *Foods*, **14**(6):1005.

Cornell, J.A. 2002, *Experiments with Mixtures: Designs, Models, and the Analysis of Mixture Data*, 3rd edn, Wiley, New York.

Da Silva, J.D., Silva, F.A.M. and Rodrigues, C.F. 2025, Microbial contamination in cosmetic products, *Cosmetics*, **12**(5):198.

Da Silva, T.L.M., De Oliveira Capote, A.C.M., Beltrame, F.L. and Ferrari, P.C. 2026, Nanoemulsions for skin delivery of essential oils: a systematic review, *Phytotherapy Research*, **40**(3):847–872.

Deveci, E. 2025, Nanoemulsions in cosmetics: enhancing efficacy and stability, *Journal of Dermatologic Science and Cosmetic Technology*, **2**(3):100107.

Di Nicolantonio, L., Gigliobianco, M.R., Peregrina, D.V., Angeloni, S., Ilorini, L., Martino, P.D., *et al.* 2022, Impact of the interactions between fragrances and cosmetic bases on the fragrance olfactory performance: a tentative to correlate SPME-GC/MS analysis with that of an experienced perfumer, *Cosmetics*, **9**(4):70.

Du, X., Davila, M., Ramirez, J. and Williams, C. 2022, Free amino acids and volatile aroma compounds in watermelon rind, flesh, and three rind-flesh juices, *Molecules*, **27**(8):2536.

Du, X. and Ramirez, J. 2022, Watermelon rind and flesh volatile profiles and cultivar difference, *Horticulturae*, **8**(2):99.

Elsayed, T. and Hathout, R.M. 2024, Evaluating the prediction power and accuracy of two smart response surface experimental designs after revisiting repaglinide floating tablets, *Future Journal of Pharmaceutical Sciences*, **10**(1):34.

Elsewedy, H.S., Shehata, T.M., Genedy, S.M., Siddiq, K.M., Asiri, B.Y., Alshammari, R.A., *et al.* 2024, Enhancing the topical antibacterial activity of fusidic acid via embedding into cinnamon oil nano-lipid carrier, *Gels*, **10**(4):268.

UNIVERSITAS
GADJAH MADA
**Pengembangan Parfum Berbasis Nanoemulsi dengan Senyawa Volatil Gama Melon Parfum**
Indra Gunawan, Prof. Dr. apt. T.N. Saifullah Sulaiman, M.Si.; Prof. Dr. Budi Setiadi Daryono, M.Agr.Sc.; Dr. apt. Eka
**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Esteras, C., Rambla, J.L., Sánchez, G., Granell, A. and Picó, M.B. 2020, Melon genetic resources characterization for rind volatile profile, *Agronomy*, **10**(10):1512.

European Parliament and Council. 2009, *Regulation (EC) No 1223/2009 on Cosmetic Products*, Brussels, Official Journal of the European Union.

Farcuh, M., Copes, B., Le-Navenec, G., Marroquin, J., Cantu, D., Bradford, K.J., *et al.* 2020, Sensory, physicochemical and volatile compound analysis of short and long shelf-life melon (*Cucumis melo* L.) genotypes at harvest and after postharvest storage, *Food Chemistry: X*, **8**:100107.

Flekka, K., Dimaki, V.D., Mourelatou, E., Avgoustakis, K., Lamari, F.N. and Hatziantoniou, S. 2024, Stability and retention of nanoemulsion formulations incorporating lavender essential oil, *Cosmetics*, **11**(3):65.

Fukutani, Y., Abe, M., Saito, H., Eguchi, R., Tazawa, T., De March, C.A., *et al.* 2023, Antagonistic interactions between odorants alter human odor perception, *Current Biology*, **33**(11):2235–2245.e4.

Galvan, D., Effting, L., Cremasco, H. and Conte-Junior, C.A. 2021, Recent applications of mixture designs in beverages, foods, and pharmaceutical health: a systematic review and meta-analysis, *Foods*, **10**(8):1941.

Gamal El-Din, M.I., Youssef, F.S., Altyar, A.E. and Ashour, M.L. 2022, GC/MS analyses of the essential oils obtained from different *Jatropha* species, their discrimination using chemometric analysis and assessment of their antibacterial and anti-biofilm activities, *Plants*, **11**(9):1268.

Gamero-Salinas, J. and López-Fidalgo, J. 2025, Response surface methodology using desirability functions for multiobjective optimization to minimize indoor overheating hours and maximize useful daylight illuminance, *Scientific Reports*, **15**(1):12173.

Goos, P., Jones, B. and Syafitri, U. 2016, I-optimal design of mixture experiments, *Journal of the American Statistical Association*, **111**(514):899–911.

Górska-Horczyczak, E., Jamróz, E., Żbik, K., Markowska-Radomska, A. and Zalewska, M. 2025, Effects of preservation methods on the volatile compound profile and physicochemical properties of *Aronia melanocarpa* berries, *Applied Sciences*, **15**(19):10470.

Guan, W., Xin, R., Liang, M., Zhou, Y., Wang, R. and Liu, Y. 2024, Olfactory perceptual interactions of maltol with key food odorants in binary mixtures: scatter matrix statistical analysis of odor intensity in heterogeneous perceptual situation, *Food Chemistry*, **456**:139951.

Guerrero-Esperanza, M., Hernández-Peña, R., Molina-Torres, J. and Ordaz-Ortiz, J.J. 2025, Non-targeted metabolomics for origin differentiation of cured vanilla pods (*Vanilla planifolia*) by LC-MS and GC-MS, *Microchemical Journal*, **216**:114795.

UNIVERSITAS
GADJAH MADA
**Pengembangan Parfum Berbasis Nanoemulsi dengan Senyawa Volatil Gama Melon Parfum**
Indra Gunawan, Prof. Dr. apt. T.N. Saifullah Sulaiman, M.Si.; Prof. Dr. Budi Setiadi Daryono, M.Agr.Sc.; Dr. apt. Eka
**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Gunawan, I., Daryono, B.S., Noviana, E. and Sulaiman, T.N.S. 2025, *Cucumis melo* L. 'Gama Melon Parfum' extract: volatile compound profile, optimization, preparation and perfume radar, *Majalah Obat Tradisional*, **30**(1):74.

Gunawan, I. and Rahayu, P. 2021, Formulasi dan evaluasi parfum tipe *eau de toilette* (EDT) "Senarai Jingga", *Jurnal Kesehatan*, **12**(2):257–265.

Guo, K., Zhao, J., Fang, S., Zhang, Q., Nie, L. and Zhao, W. 2024, The effects of different rootstocks on aroma components, activities and genes expression of aroma-related enzymes in oriental melon fruit, *PeerJ*, **12**:e16704.

Guzmán, E. and Lucia, A. 2021, Essential oils and their individual components in cosmetic products, *Cosmetics*, **8**(4):114.

Habib, B.A., Abdeltawab, N.F. and Salah Ad-Din, I. 2022, D-optimal mixture design for optimization of topical dapsone niosomes: in vitro characterization and in vivo activity against *Cutibacterium acnes*, *Drug Delivery*, **29**(1):821–836.

Hadjiefstathiou, E., Terescenco, D., Loisel, V., Picard, C., Malhiac, C. and Savary, G. 2025, An innovative device for in vivo and in vitro study of fragrance evaporation after application on skin or model surfaces, *Talanta*, **281**:126851.

Hagos, M., Yaya, E.E., Chandravanshi, B.S. and Redi-Abshiro, M. 2022, Analysis of volatile compounds in flesh, peel and seed parts of pumpkin (*Cucurbita maxima*) cultivated in Ethiopia using gas chromatography-mass spectrometry (GC-MS), *International Journal of Food Properties*, **25**(1):1498–1512.

Hasbullah, U.H.A., Supriyadi and Daryono, B.S. 2019, 'Aroma volatile compounds profile of melon (*Cucumis melo* L.) cv. Gama Melon Parfum', *IOP Conference Series: Earth and Environmental Science*, **292**(1):012027.

Hasbullah, U.H.A., Supriyadi and Daryono, B.S. 2021, Volatile compounds trigger the pleasant strong aroma of new cultivar Gama Melon Parfum during growth and maturation, *Advances in Food Science, Sustainable Agriculture and Agroindustrial Engineering*, **4**(1):33–38.

Hawko, C., Hucher, N., Crunaire, S., Leger, C., Locoge, N., Verriele, M., *et al.* 2023, How the experimental design associated with objectivized sensory analysis can be used to predict odor quality of gaseous mixtures?, *Chemometrics and Intelligent Laboratory Systems*, **235**:104780.

Huang, X., Zhao, H., Guo, R., Du, F., Dong, X. and Qin, L. 2023, The interaction relationship of aroma components releasing with saliva and chewing degree during grilled eels consumption, *Foods*, **12**(11):2127.

Iskandar, B., Liu, T.-W., Mei, H.-C., Kuo, I.-C., Surboyo, M.D.C., Lin, H.-M., *et al.* 2024, Herbal nanoemulsions in cosmetic science: a comprehensive review of design, preparation, formulation, and characterization, *Journal of Food and Drug Analysis*, **32**(4):428–458.

UNIVERSITAS
GADJAH MADA
**Pengembangan Parfum Berbasis Nanoemulsi dengan Senyawa Volatil Gama Melon Parfum**
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**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Iskandar, B., Mei, H.-C., Liu, T.-W., Lin, H.-M. and Lee, C.-K. 2024, Evaluating the effects of surfactant types on the properties and stability of oil-in-water *Rhodiola rosea* nanoemulsion, *Colloids and Surfaces B: Biointerfaces*, **234**:113692.

International Fragrance Association. 2023a, Guidance for the Use of the IFRA Standards, 51st Amendment, Geneva, International Fragrance Association.

International Fragrance Association. 2023b, Notification of the 51st Amendment to the IFRA Standards, Geneva, International Fragrance Association.

International Organization for Standardization. 2014, *ISO 17516:2014 Cosmetics-Microbiology-Microbiological Limits*, Geneva, International Organization for Standardization.

Jacob, S., Kather, F.S., Boddu, S.H.S., Shah, J. and Nair, A.B. 2024, Innovations in nanoemulsion technology: enhancing drug delivery for oral, parenteral, and ophthalmic applications, *Pharmaceutics*, **16**(10):1333.

Jacob, S. and Nair, A.B. 2026, Nanoemulgels as advanced topical drug delivery systems: mechanistic insights and therapeutic applications in skin disorders, infections, wound healing, and cancer, *Pharmaceuticals*, **19**(2):247.

Jafaar, I.S., Alwan, O.M. and Al-Shohani, A.D.H. 2026, Box-Behnken design-based development and optimization of potentiated antibacterial nanoemulgel for azithromycin, *OpenNano*, **29**:100298.

Jain, S. and Pandey, A. 2025, Formulation development and optimization of nanoemulsion gel containing *Prosopis cineraria*, *Aerva javanica*, and *Fagonia indica* extracts for treatment of arthritis, *Journal of Applied Pharmaceutical Science*.

Jankovic, A., Chaudhary, G. and Goia, F. 2021, Designing the design of experiments (DOE): an investigation on the influence of different factorial designs on the characterization of complex systems, *Energy and Buildings*, **250**:111298.

Kapolos, J., Giannopoulou, D., Papadimitriou, K. and Koliadima, A. 2025, A comprehensive review of emulsion-based nisin delivery systems for food safety, *Foods*, **14**(8):1338.

Kaur, G., Panigrahi, C., Agarwal, S., Khuntia, A. and Sahoo, M. 2024, Recent trends and advancements in nanoemulsions: production methods, functional properties, applications in food sector, safety and toxicological effects, *Food Physics*, **1**:100024.

Kayiran, S.D., Bolgen, U.M.G., Akgül, E., Kadiroglu, P., Cengiz, N., Cevikelli, T., *et al.* 2025, Chemical composition, characterization, and antimicrobial properties of *Thymbra spicata* essential oil-based nanoemulsions and its application on curd cheese, *Frontiers in Nutrition*, **12**:1615832.

Khuri, A.I. and Mukhopadhyay, S. 2010, Response surface methodology, *WIREs Computational Statistics*, **2**(2):128–149.

UNIVERSITAS
GADJAH MADA
**Pengembangan Parfum Berbasis Nanoemulsi dengan Senyawa Volatil Gama Melon Parfum**
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**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Kim, J., Oh, K. and Oh, B.-S. 2024, An NLP-based perfume note estimation based on descriptive sentences, *Applied Sciences*, **14**(20):9293.

Kim, J.-H., Son, S.-H., Lee, H.W., Kim, J.H., Kang, S.-M. and Choi, C.-H. 2026, Scalable nanoemulsion formation of lipophilic active ingredients via low-energy phase inversion, *Polymers*, **18**(7):794.

Koch, P., Borah, M., Deka, S.C. and Mishra, P. 2026, Development and characterization of a functional nanoemulsion using pomelo peel essential oil and curcumin, *Sustainable Food Technology*, **4**(1):727–735.

Koo, I., Kim, S. and Zhang, X. 2013, Comparative analysis of mass spectral matching-based compound identification in gas chromatography-mass spectrometry, *Journal of Chromatography A*, **1298**:132–138.

Koushik, Y., Rama Rao, N., Sri Venkatesh, U., Rami Reddy, G.V., Surendra, A.V. and Sreenu, T. 2025, Formulation and optimization of a *Melissa officinalis*-loaded nanoemulgel for anti-inflammatory therapy using design of experiments (DoE), *Gels*, **11**(10):776.

Kumar, M., Bishnoi, R.S., Shukla, A.K. and Jain, C.P. 2019, Techniques for formulation of nanoemulsion drug delivery system: a review, *Preventive Nutrition and Food Science*, **24**(3):225–234.

Kumari, S., Alam, A.N., Hossain, M.J., Lee, E.-Y., Hwang, Y.-H. and Joo, S.-T. 2023, Sensory evaluation of plant-based meat: bridging the gap with animal meat, challenges and future prospects, *Foods*, **13**(1):108.

Kurt, A.A., Ibrahim, B., Çınar, H., Atsü, A.N., Bursalıoğlu, E.O., Bayır, İ., *et al.* 2025, Nanoemulsion hydrogel delivery system of *Hypericum perforatum* L.: in silico design, in vitro antimicrobial-toxicological profiling, and in vivo wound-healing evaluation, *Gels*, **11**(6):431.

Kyriacou, M.C., Leskovar, D.I., Colla, G. and Rouphael, Y. 2018, Watermelon and melon fruit quality: the genotypic and agro-environmental factors implicated, *Scientia Horticulturae*, **234**:393–408.

Lee, C.-S., Chen, Y.-C., Chiang, M.-C., Yeh, C.-H., Ho, Y.-C., Huang, W.-H., *et al.* 2024, Evaluating the sensory profiles of Taiwan and Madagascar vanilla beans: impacts on ice cream quality and consumer preferences, *Agronomy*, **14**(8):1838.

Lee, J.Y., Han, Y. and Styczynski, M.P. 2023, Towards inferring absolute concentrations from relative abundance in time-course GC-MS metabolomics data, Molecular Omics, **19**(2):126–136.

Li, X., Wang, H., Zhang, C., Li, S., Wang, H., Yu, P., *et al.* 2025, Unveiling the key aroma-active volatiles influencing consumer preferences in typical oriental melon varieties by molecular sensory science methods, *Journal of Food Composition and Analysis*, **143**:107527.

UNIVERSITAS
GADJAH MADA
**Pengembangan Parfum Berbasis Nanoemulsi dengan Senyawa Volatil Gama Melon Parfum**
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**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Liana, D., Chatwichien, J. and Phanumartwiwath, A. 2025, Enhanced anti-inflammatory and skin barrier repair effects of nanoemulsions supplemented with *Boesenbergia rotunda* for atopic dermatitis, *ACS Nanoscience Au*, **5**(1):37–51.

Lignou, S., Parker, J.K., Baxter, C. and Mottram, D.S. 2014, Sensory and instrumental analysis of medium and long shelf-life Charentais cantaloupe melons (*Cucumis melo* L.) harvested at different maturities, *Food Chemistry*, **148**:218–229.

Lima, M.A., Carusi, J., Rocha, L.D.O., Tonon, R.V., Cunha, R.L. and Rosenthal, A. 2024, Physicochemical characterization, rheological properties, and antimicrobial activity of sodium alginate-pink pepper essential oil (PPEO) nanoemulsions, *Foods*, **13**(19):3090.

Limmun, W., Chomtee, B. and Borkowski, J.J. 2025, Robust D-optimal mixture designs under manufacturing tolerances via multi-objective NSGA-II, *Mathematics*, **13**(18):2950.

Lin, L., Lv, Z., Wang, M., Kan, A., Zou, S., Wu, B., *et al.* 2025, Comparative analysis of chemical composition and antibacterial activity of essential oils from five varieties of lavender extracted via supercritical fluid extraction, *Molecules*, **30**(2):217.

Liu, T., Gao, Z., Zhong, W., Fu, F., Li, G., Guo, J., *et al.* 2022, Preparation, characterization, and antioxidant activity of nanoemulsions incorporating lemon essential oil, *Antioxidants*, **11**(4):650.

Lu, H., Zhao, H., Zhong, T., Chen, D., Wu, Y. and Xie, Z. 2024, Molecular regulatory mechanisms affecting fruit aroma, *Foods*, **13**(12):1870.

Lu, W.-C., Huang, D.-W., Wang, C.-C.R., Yeh, C.-H., Tsai, J.-C., Huang, Y.-T., *et al.* 2018, Preparation, characterization, and antimicrobial activity of nanoemulsions incorporating citral essential oil, *Journal of Food and Drug Analysis*, **26**(1):82–89.

Lukić, M., Pantelić, I. and Savić, S.D. 2021, Towards optimal pH of the skin and topical formulations: from the current state of the art to tailored products, *Cosmetics*, **8**(3):69.

Luu, N.A., To, T.T., Tran, N.H., Vu, G.M., Ngo, N.Y.L., Tran, M.P.L., *et al.* 2025, Optimization of plant oil-based nanoemulsions prepared via phase inversion temperature and evaluation of their antioxidant capacity, *Oil Crop Science*, **10**(3):194–204.

Ma, Y., Xu, Y. and Tang, K. 2025, Olfactory perception complexity induced by key odorants perceptual interactions of alcoholic beverages: wine as a focus case example, *Food Chemistry*, **463**:141433.

Mahalaxme, A.P., Lokhande, K.D., Bhakare, M.A. and Some, S. 2025, Formulation and development of water-based fragrance from patchouli essential oil using novel surfactant, *Journal of the Indian Chemical Society*, **102**(1):101533.

UNIVERSITAS
GADJAH MADA
**Pengembangan Parfum Berbasis Nanoemulsi dengan Senyawa Volatil Gama Melon Parfum**
Indra Gunawan, Prof. Dr. apt. T.N. Saifullah Sulaiman, M.Si.; Prof. Dr. Budi Setiadi Daryono, M.Agr.Sc.; Dr. apt. Eka
**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Mahmud, J., Muranyi, P., Shankar, S., Sarmast, E., Salmieri, S. and Lacroix, M. 2024, Physiological and antimicrobial properties of a novel nanoemulsion formulation containing mixed surfactant and essential oils: optimization modeling by response surface methodology, *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, **686**:133405.

Majithia, D., Metrani, R., Dhowlaghar, N., Crosby, K.M. and Patil, B.S. 2021, Assessment and classification of volatile profiles in melon breeding lines using headspace solid-phase microextraction coupled with gas chromatography-mass spectrometry, *Plants*, **10**(10):2166.

Makwakwa, T.A., Moema, E.D. and Makudali Msagati, T.A. 2024, Method development and optimization for dispersive liquid-liquid microextraction factors using response surface methodology with desirability function for the ultra-high performance liquid chromatography quadrupole time-of-flight mass spectrometry determination of organic contaminants in water samples: risk and greenness assessment, *Analytical Methods*, **16**(44):7598–7612.

Manyatsi, T.-S., Lin, Y.-H., Sung, P.-H. and Jou, Y.-T. 2024, Exploring the volatile profile of *Vanilla planifolia* after fermentation at low temperature with *Bacillus* isolates, *Foods*, **13**(17):2777.

Maryanto, S.D., Ranis, R.E. and Daryono, B.S. 2014, 'Stability phenotypic characters and the scent of Gama Melon Parfum cultivar', *IPTEK, Journal of Proceeding Series*, **1**:523–528.

Marzuki, N.H.C., Wahab, R.A. and Hamid, M.A. 2019, An overview of nanoemulsion: concepts of development and cosmeceutical applications, *Biotechnology & Biotechnological Equipment*, **33**(1):779–797.

Mayobre, C., Garcia-Mas, J. and Pujol, M. 2024, A matter of smell: the complex regulation of aroma production in melon, *Food Chemistry*, **460**:140640.

Mehmood, T., Ahmed, A., Ahmad, A., Ahmad, M.S. and Sandhu, M.A. 2018, Optimization of mixed surfactants-based β-carotene nanoemulsions using response surface methodology: an ultrasonic homogenization approach, *Food Chemistry*, **253**:179–184.

Miastkowska, M., Lasoń, E., Sikora, E. and Wolińska-Kennard, K. 2018, Preparation and characterization of water-based nano-perfumes, *Nanomaterials*, **8**(981):1–15.

Mijaljica, D., Townley, J.P., Klionsky, D.J., Spada, F. and Lai, M. 2025, The origin, intricate nature, and role of the skin surface pH (pHSS) in barrier integrity, eczema, and psoriasis, *Cosmetics*, **12**(1):24.

Mohamadyan, W., Yousefi, S. and Weisany, W. 2024, Development of edible nanoemulsions containing vitamin E using a low-energy method: evaluation of particle size and physicochemical properties for food and beverage applications, *Heliyon*, **10**(12):e32415.

UNIVERSITAS
GADJAH MADA
**Pengembangan Parfum Berbasis Nanoemulsi dengan Senyawa Volatil Gama Melon Parfum**
Indra Gunawan, Prof. Dr. apt. T.N. Saifullah Sulaiman, M.Si.; Prof. Dr. Budi Setiadi Daryono, M.Agr.Sc.; Dr. apt. Eka
**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Montgomery, D.C. 2017, *Design and Analysis of Experiments*, 9th edn, John Wiley & Sons, New Jersey.

Montenegro, I., Fuentes, B., Silva, V., Valdés, F., Werner, E., Santander, R., *et al.* 2025, Nanoemulsion of *Gomortega keule* essential oil: characterization, chemical composition, and anti-yeast activity against *Candida* spp., *Pharmaceutics*, **17**(6):755.

Moura, M.C.D.O., Assuncão, E.M.D.S., Barbosa, S.S., Tenente, E.I.L., De Souza, A.P., Dos Santos, R.V.M., *et al.* 2025, Essential oil from the leaves of the dwarf cashew tree (*Anacardium occidentale* L.) in the Amazon savannah: physicochemical and antioxidant properties as a food preservative, *Foods*, **14**(11):1954.

Mozayad, A.N., Fouad, M.A. and Elkady, E.F. 2024, Utilizing experimental design and desirability function in optimizing RP-HPLC method for simultaneous determination of some skeletal muscle relaxants and analgesics, *Scientific Reports*, **14**(1):10360.

Musakhanian, J. and Osborne, D.W. 2025, Understanding microemulsions and nanoemulsions in (trans)dermal delivery, *AAPS PharmSciTech*, **26**(1):31.

Musika, J., Kapcum, C., Itthivadhanapong, P., Musika, T., Hanmontree, P. and Piayura, S. 2024, Enhancing nutritional and functional properties of gluten-free Riceberry rice pasta supplemented with cricket powder using D-optimal mixture design, *Frontiers in Sustainable Food Systems*, **8**:1417045.

Nagashima, Y., He, K., Singh, J., Metrani, R., Crosby, K.M., Jifon, J., *et al.* 2021, Transition of aromatic volatile and transcriptome profiles during melon fruit ripening, *Plant Science*, **304**:110809.

Napiórkowska, A., Khaneghah, A.M. and Kurek, M.A. 2024, Essential oil nanoemulsions: a new strategy to extend the shelf life of smoothies, *Foods*, **13**(12):1854.

National Institute of Standards and Technology. 2023, 'NIST 23 GC Method/Retention Index Database', viewed 15 May 2024,<https://chemdata.nist.gov/dokuwiki/doku.php?id=chemdata%3Aridatabase/>.

Nedkov, N., Dobreva, A., Kovacheva, N., Bardarov, V. and Velcheva, A. 2009. Bulgarian rose oil of white oil-bearing rose. *Bulgarian Journal of Agricultural Science* **15**(4): 318–322.

Organisation for Economic Co-operation and Development. 2015, *Test No. 404: Acute Dermal Irritation/Corrosion*, OECD Guidelines for the Testing of Chemicals, Section 4, Paris, OECD Publishing.

Olier, I., Zhan, Y., Liang, X. and Volovici, V. 2023, Causal inference and observational data, *BMC Medical Research Methodology*, **23**(1):227.

Omidian, H., Cubeddu, L.X. and Gill, E.J. 2025, Harnessing nanotechnology to enhance essential oil applications, *Molecules*, **30**(3):520.

UNIVERSITAS
GADJAH MADA
**Pengembangan Parfum Berbasis Nanoemulsi dengan Senyawa Volatil Gama Melon Parfum**
Indra Gunawan, Prof. Dr. apt. T.N. Saifullah Sulaiman, M.Si.; Prof. Dr. Budi Setiadi Daryono, M.Agr.Sc.; Dr. apt. Eka
**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Oprea, I., Fărcaș, A.C., Leopold, L.F., Diaconeasa, Z., Coman, C. and Socaci, S.A. 2022, Nano-encapsulation of citrus essential oils: methods and applications of interest for the food sector, *Polymers*, **14**(21):4505.

Peng, X., Ren, W., Jia, M., Zhou, Q., Li, B., Li, G., *et al.* 2025, Multi-scale study on the volatility of essential oil and its modulation methods, *Journal of Drug Delivery Science and Technology*, **112**:107227.

Peter, E.L. and Sesaazi, C.D. 2022, D-optimal mixture design optimized solid formulation containing fruits extracts of *Momordica charantia* and *Abelmoschus esculentus*, *PLOS ONE*, **17**(6):e0270547.

Pieracci, Y., Pistelli, L., Cecchi, M., Pistelli, L. and De Leo, M. 2022, Phytochemical characterization of citrus-based products supporting their antioxidant effect and sensory quality, *Foods*, **11**(11):1550.

Pradasari, A.S. and Paramita, V. 2024, Optimization of lemongrass oil (*Cymbopogon citratus*) emulsion with the addition of cethyl alcohol as a natural cosurfactant, *Journal of Vocational Studies on Applied Research*, **5**(2):44–51.

Pu, D., Xu, Z., Sun, B., Wang, Y., Xu, J. and Zhang, Y. 2025, Advances in food aroma analysis: extraction, separation, and quantification techniques, *Foods*, **14**(8):1302.

Qadir, S., Imam, S., Ali, S.A., Ali, F.R., Iffat, W., Yousuf, R.I., *et al.* 2026, Development of nanoemulsion formulation loaded with *Enteromorpha intestinalis* extract: characterization and evaluation for topical use, *PLOS One*, **21**(3):e0343626.

Quan, W., Jin, J., Qian, C., Li, C. and Zhou, H. 2023, Characterization of volatiles in flowers from four *Rosa chinensis* cultivars by HS-SPME-GC × GC-QTOFMS, *Frontiers in Plant Science*, **14**:1060747.

Rafya, M., Hafidi, A., Zehhar, N. and Benkhalti, F. 2023, Optimization of three-component essential oil-loaded nanoemulsions in combination using D-optimal mixture design, *South African Journal of Botany*, **159**:472–481.

Raymundo-Rodríguez, J., Buendía-Espinoza, J., García-Núñez, R. and Martínez-Ochoa, E. 2024, Evaluation of two cosmetic products formulated with essential oil extracted from copal resin obtained in agroforestry systems, *Cosmetics*, **11**(5):169.

Reyniers, S., De Brier, N., Brijs, K., De Ketelaere, B., Akkermans, W., Matthijs, S., *et al.* 2022, I-optimal design of split-plot mixture-process variable experiments: a case study on potato crisps, *Food Quality and Preference*, **101**:104620.

Rodrigues, A.E., Nogueira, I. and Faria, R.P.V. 2021, Perfume and flavor engineering: a chemical engineering perspective, *Molecules*, **26**(11):3095.

UNIVERSITAS
GADJAH MADA
**Pengembangan Parfum Berbasis Nanoemulsi dengan Senyawa Volatil Gama Melon Parfum**
Indra Gunawan, Prof. Dr. apt. T.N. Saifullah Sulaiman, M.Si.; Prof. Dr. Budi Setiadi Daryono, M.Agr.Sc.; Dr. apt. Eka
**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Safaya, M. and Rotliwala, Y.C. 2020, Nanoemulsions: a review on low energy formulation methods, characterization, applications and optimization technique, *Materials Today: Proceedings*, **27**:454–459.

Santamaría, E., Maestro, A., Vilchez, S. and González, C. 2023, Study of nanoemulsions using carvacrol/MCT-(oleic acid-potassium oleate)/Tween 80®-water system by low energy method, *Heliyon*, **9**(6):e16967.

Sarhir, S.T., Belkhou, R., Bouseta, A. and Hayaloglu, A.A. 2024, A mixture design approach to develop new starter formulation for Lben: key aroma compounds, physical, chemical and sensory properties of the product, *International Dairy Journal*, **157**:106001.

Sathirachawan, K., Chansiri, K., Sirikate, D., Sittiprapaporn, P., Rungsiwiwut, R. and Saiyudthong, S. 2025, Fragrance preference of essential oil blends for reducing stress and sleep problems in adult women, *Universa Medicina*, **44**(2):162–171.

Scientific Committee on Consumer Safety. 2023, *Notes of Guidance for the Testing of Cosmetic Ingredients and Their Safety Evaluation, 12th Revision*, SCCS/1647/22, Luxembourg, Publications Office of the European Union.

Shang, J., Feng, D., Liu, H., Niu, L., Li, R., Li, Y., *et al.* 2024, Evolution of the biosynthetic pathways of terpene scent compounds in roses, *Current Biology*, **34**(15):3550–3563.e8.

Shao, X., He, W., Fan, Y., Shen, Q., Mao, J., Li, M., *et al.* 2022, Study on the differences in aroma components and formation mechanisms of “Nasmi” melon from different production areas, *Food Science & Nutrition*, **10**(11):3608–3620.

Shabbir, M.K., Nadeem, R., Mukhtar, H., Anwar, F. and Mumtaz, M.W. 2009. Physico-chemical analysis and determination of various chemical constituents of essential oil in *Rosa centifolia*. *Pakistan Journal of Botany* 41(2): 615–620.

Sharmeen, J., Mahomoodally, F., Zengin, G. and Maggi, F. 2021, Essential oils as natural sources of fragrance compounds for cosmetics and cosmeceuticals, *Molecules*, **26**(3):666.

Sherif, A.Y. and Elzayat, E.M. 2025, Development of bioresponsive poloxamer-based self-nanoemulsifying system for enhanced febuxostat bioavailability: solidification strategy using I-optimal approach, *Pharmaceutics*, **17**(8):975.

Shi, S. and Zhang, Z. 2022, Genetic and biochemical aspects of floral scents in roses, *International Journal of Molecular Sciences*, **23**(14):8014.

Shinde, R., Vinokur, Y., Fallik, E. and Rodov, V. 2024, Effects of genotype and modified atmosphere packaging on the quality of fresh-cut melons, *Foods*, **13**(2):256.

Sikora, E., Miastkowska, M., Wolińska-Kennard, K. and Lasoń, E. 2018, Nanoemulsions as a form of perfumery products, *Cosmetics*, **5**(4):63.

UNIVERSITAS
GADJAH MADA
**Pengembangan Parfum Berbasis Nanoemulsi dengan Senyawa Volatil Gama Melon Parfum**
Indra Gunawan, Prof. Dr. apt. T.N. Saifullah Sulaiman, M.Si.; Prof. Dr. Budi Setiadi Daryono, M.Agr.Sc.; Dr. apt. Eka
**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Son, J.H., Islam, M.A., Hong, J.H., Jeong, J.Y., Song, O.Y., Kim, H.E., *et al.* 2021, Extraction of volatile organic compounds from leaves of *Ambrosia artemisiifolia* L. and *Artemisia annua* L. by headspace-solid phase microextraction and simultaneous distillation extraction and analysis by gas chromatography/mass spectrometry, *Food Science and Biotechnology*, **30**(3):355–366.

Song, F., Sun, Z., Guo, H., Chen, J. and Jin, X. 2024, Low temperature conditioning and nitric oxide treatment reduced chilling injury and altered fatty acid metabolism of flat peaches, *Postharvest Biology and Technology*, **218**:113191.

Song, L., Li, W., Hu, Z., Lv, Y., Liu, J., Cheng, F., *et al.* 2025, Development and optimization of thymol-loaded nanoemulsions for enhanced antimicrobial activity against methicillin-resistant *Staphylococcus aureus*, *Scientific Reports*, **15**(1):44992.

Song, X., Porter, M.E., Whitaker, V.M., Lee, S. and Wang, Y. 2023, Identification of ethyl vanillin in strawberry (*Fragaria* × *ananassa*) using a targeted metabolomics strategy: from artificial to natural, *Food Chemistry: X*, **20**:100944.

Souiy, Z., Amri, Z., Sharif, H., Souiy, A., Cheraief, I., Hamden, K., *et al.* 2023, The use of D-optimal mixture design in optimizing formulation of a nutraceutical hard candy, *International Journal of Food Science*, **2023**:1–12.

Spadafora, N.D., Cocetta, G., Cavaiuolo, M., Bulgari, R., Dhorajiwala, R., Ferrante, A., *et al.* 2019, A complex interaction between pre-harvest and post-harvest factors determines fresh-cut melon quality and aroma, *Scientific Reports*, **9**(1):2745.

Spence, C. 2021, What is the relationship between the presence of volatile organic compounds in food and drink products and multisensory flavour perception?, *Foods*, **10**(7):1570.

Stat-Ease, Inc. 2020, *Design-Expert® Software Version 12 User's Guide*, Stat-Ease Inc., Minneapolis, MN, USA.

Sun, J., Xu, Y., Chen, R., Huang, J., Yu, P., Wei, Q., *et al.* 2025, Function analysis of essential oils as environmental scents for improving undergraduate students emotional state, *Industrial Crops and Products*, **232**:121200.

Syafitri, U., Sartono, B. and Goos, P. 2015, I-optimal design of mixture experiments in the presence of ingredient availability constraints, *Journal of Quality Technology*, **47**(3):220–234.

Teixeira, M.A. 2011, 'Perfume performance and classification: perfumery quaternary-quinary diagram (PQ2D®) and perfumery radar', Ph.D Thesis, Department of Chemical Engineering, Faculty of Engineering, University of Porto, Porto.

UNIVERSITAS
GADJAH MADA
**Pengembangan Parfum Berbasis Nanoemulsi dengan Senyawa Volatil Gama Melon Parfum**
Indra Gunawan, Prof. Dr. apt. T.N. Saifullah Sulaiman, M.Si.; Prof. Dr. Budi Setiadi Daryono, M.Agr.Sc.; Dr. apt. Eka
**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Teixeira, M.A., Rodríguez, O., Gomes, P., Mata, V. and Rodrigues, A.E. 2013, *Perfume Engineering: Design, Performance and Classification*, Butterworth-Heinemann, Oxford.

Teixeira, M.A., Rodríguez, O., Mata, V.G. and Rodrigues, A.E. 2009, The diffusion of perfume mixtures and the odor performance, *Chemical Engineering Science*, **64**(11):2570–2589.

Tominc, G.C., Dalmagro, M., Pereira, E.D.C.A., Adamczuk, M.S., Bonato, F.G.C., Almeida, R.M.D., *et al.* 2024, Formulation and characterization of nanoemulsion incorporating *Chamomilla recutita* L. extract stabilized with hyaluronic acid, *Pharmaceutics*, **16**(6):701.

Tura, D.C., Belachew, T., Tamiru, D. and Abate, K.H. 2023, Optimization of a formula to develop iron-dense novel composite complementary flour with a reduced phytate/minerals molar ratio from dabi teff-field pea-based blends using a D-optimal mixture design, *Frontiers in Nutrition*, **10**:1244571.

Uche, C.U., Okezue, M.A., Amidu, I. and Byrn, S.R. 2024, Model adequacy in assessing the predictive performance of regression models in pharmaceutical product optimization: the bedaquiline solid lipid nanoparticle example, *Scientia Pharmaceutica*, **92**(4):64.

Ullah, N., Amin, A., Alamoudi, R.A., Rasheed, S.A., Alamoudi, R.A., Nawaz, A., *et al.* 2022, Fabrication and optimization of essential-oil-loaded nanoemulsion using Box-Behnken design against *Staphylococcus aureus* and *Staphylococcus epidermidis* isolated from oral cavity, *Pharmaceutics*, **14**(8):1640.

Une, V.R., Bondarde, M.P. and Some, S. 2022, Formulation and development of water-based fragrance from patchouli essential oils using nonionic surfactant, *Applied Nanoscience*, **12**(7):2117–2125.

Valverde, M.A.F., Sánchez-Palomo, E., Alises, M.O., Romero, C.C. and González-Viñas, M.A. 2021, Volatile and sensory characterization of La Mancha Trujillo melons over three consecutive harvests, *Foods*, **10**(8):1683.

Vasquez-Gomez, K.L., Mori-Mestanza, D., Caetano, A.C., Idrogo-Vasquez, G., Culqui-Arce, C., Auquiñivin-Silva, E.A., *et al.* 2024, Exploring chemical properties of essential oils from citrus peels using green solvent, *Heliyon*, **10**(21):e40088.

Wang, H., Cui, J., Bao, R., Zhang, H., Zhao, Z., Chen, X., *et al.* 2024, Research progress on the effects of postharvest storage methods on melon quality, *PeerJ*, **12**:e17800.

Wang, J., Li, Z., Sun, F., Tang, S., Zhang, S., Lv, P., *et al.* 2017, Evaluation of dermal irritation and skin sensitization due to vitacoxib, *Toxicology Reports*, **4**:287–290.

Wang, Y., Li, B., Zhu, L., Wang, P., Xu, F. and Zhang, Y. 2022, Octenyl succinic acid starch-stabilized vanilla essential oil Pickering emulsion: preparation, characterization, antioxidant activity, and storage stability, *Foods*, **11**(7):987.

UNIVERSITAS
GADJAH MADA
**Pengembangan Parfum Berbasis Nanoemulsi dengan Senyawa Volatil Gama Melon Parfum**
Indra Gunawan, Prof. Dr. apt. T.N. Saifullah Sulaiman, M.Si.; Prof. Dr. Budi Setiadi Daryono, M.Agr.Sc.; Dr. apt. Eka
**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Wibowo, W.A., Maryanto, S.D. and Daryono, B.S. 2021, Phenotypic characters and identification CYPs (Cyclophilin) gene in *Cucumis melo* L. cv. Gama Melon Parfum, *Biodiversitas*, **22**(6):3007–3014.

Wiley. 2023, 'Wiley Registry/NIST Mass Spectral Library and GC-MS Spectral Databases', viewed 15 May 2024 <https://sciencesolutions.wiley.com/solutions/technique/gc-ms/>.

Xiao, Z., Liu, L., He, J., Niu, Y., Zhu, J. and Zhang, J. 2024, The perception interaction of complex fruits aroma system: including binary, ternary, quaternary, and with different chain length, functional groups and substituent positions compounds, *LWT*, **205**:116458.

Xu, F., Shi, Y., Li, B., Liu, C., Zhang, Y. and Zhong, J. 2024, Characterization, stability and antioxidant activity of vanilla nano-emulsion and its complex essential oil, *Foods*, **13**(5):801.

Xu, L., Zou, D.-J. and Firestein, S. 2023, Odor mixtures: a chord with silent notes, *Frontiers in Ecology and Evolution*, **11**:1135486.

Yadav, P., Rastogi, V. and Verma, A. 2020, Application of Box-Behnken design and desirability function in the development and optimization of self-nanoemulsifying drug delivery system for enhanced dissolution of ezetimibe, *Future Journal of Pharmaceutical Sciences*, **6**(1):7.

Yadav, S.K. 2022, 'Physiochemical properties of essential oils and applications', in Santana De Oliveira, M. and Helena De Aguiar Andrade, E. (eds), *Biochemistry*, vol. 32, IntechOpen, London.

Yakoubi, S., Kobayashi, I., Uemura, K., Nakajima, M., Isoda, H., Ksouri, R., *et al.* 2021, Essential-oil-loaded nanoemulsion lipidic-phase optimization and modeling by response surface methodology (RSM): enhancement of their antimicrobial potential and bioavailability in nanoscale food delivery system, *Foods*, **10**(12):3149.

Yanasan, N., Wangkananon, W., Natakankitkul, S. and Kiattisin, K. 2024, Nanoemulsions containing *Passiflora quadrangularis* L. fruit extracts for cosmetic application and skin efficacy study, *Cosmetics*, **11**(2):57.

Yeh, C.-H., Chou, C.-Y., Wu, C.-S., Chu, L.-P., Huang, W.-J. and Chen, H.-C. 2022, Effects of different extraction methods on vanilla aroma, *Molecules*, **27**(14):4593.

Yeh, C.-H., Chou, C.-Y., Yang, K.-M., Wu, C.-S., Chu, L.-P., Hsu, Y.-L., *et al.* 2024, Effects of storage time and temperature on the aroma quality and color of vanilla beans (*Vanilla planifolia*) from Taiwan, *Food Chemistry: X*, **24**:101761.

Yetukuri, K. and Umashankar, M.S. 2025, Development and optimization of *Kunzea ericoides* nanoemulgel using a quality by design approach for transdermal anti-inflammatory therapy, *Gels*, **11**(6):400.

UNIVERSITAS
GADJAH MADA
**Pengembangan Parfum Berbasis Nanoemulsi dengan Senyawa Volatil Gama Melon Parfum**
Indra Gunawan, Prof. Dr. apt. T.N. Saifullah Sulaiman, M.Si.; Prof. Dr. Budi Setiadi Daryono, M.Agr.Sc.; Dr. apt. Eka
**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Yin, L., Guo, Y., Xv, X., Dai, Y., Li, L., Sun, F., *et al.* 2024, Cinnamaldehyde nanoemulsion decorated with rhamnolipid for inhibition of methicillin-resistant *Staphylococcus aureus* biofilm formation: *in vitro* and *in vivo* assessment, *Frontiers in Microbiology*, **15**:1514659.

Yousry, C., Saber, M.M. and Abd-Elsalam, W.H. 2022, A cosmeceutical topical water-in-oil nanoemulsion of natural bioactives: design of experiment, *in vitro* characterization, and *in vivo* skin performance against UVB irradiation-induced skin damages, *International Journal of Nanomedicine*, **17**:2995–3012.

Yuan, W., Yu, G., Zhu, G. and Yi, F. 2025, Characterization of perceptual interactions among aroma compounds found in *Rosa damascena* and *Angelica dahurica* root essential oil with threshold, S-curve, σ-τ plot and molecular docking, *Food Research International*, **200**:115447.

Yun, S., Kim, G.W., Jang, J., Lee, J.B. and Kim, S.Y. 2024, Ensuring long-term stability and size control of nanoemulsion via post-microfluidization dilution toward energy saving scale-up process, *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, **691**:133845.

Zhang, H., Yuan, Y., Zhu, X., Xu, R., Shen, H., Zhang, Q., *et al.* 2022, The effect of different extraction methods on extraction yield, physicochemical properties, and volatile compounds from field muskmelon seed oil, *Foods*, **11**(5):721.