

# EKSPLORASI ETNOSAINS PROSES PEMBUATAN ARAK BALI DI DESA LES: STUDI KUALITATIF KEARIFAN LOKAL DAN RELEVANSINYA DENGAN MATERI IPA SMP

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## ABSTRAK

Penelitian ini bertujuan mendeskripsikan proses pembuatan Arak Bali di Desa Les, menganalisis konsep sains asli dan ilmiah di dalamnya, serta menjelaskan relevansinya terhadap materi IPA SMP. Pendekatan kualitatif deskriptif etnosains digunakan dengan teknik *purposive sampling* terhadap petani, pemilik usaha Dapoer Bali Moela, dan guru IPA guna memperoleh data mendalam. Data penelitian dikumpulkan melalui observasi lapangan, wawancara, dokumentasi, dan angket, kemudian dianalisis menggunakan model Miles, Huberman, dan Saldaña. Hasil penelitian menunjukkan keunikan Arak Les terletak pada penggunaan nira siwalan berkadar gula optimal pada musim kemarau (Agustus) akibat minimnya dilusi air hujan. Alat tradisional yang digunakan meliputi *pengancan*, *bumbung*, *pengapit*, *pengiris*, *payuk gede*, *paon api*, *kekep*, guci, serta instrumen modern alkoholmeter. Bahan baku utama mencakup *tuak wayah*, *beem*, sabut kelapa, kayu bakar kelor yang menghasilkan aroma *smoky*, serta penambahan varian buah nangka dan mangga. Tahapan produksi meliputi penyadapan, fermentasi, distilasi, hingga proses *aging* dalam guci tertutup. Pengetahuan masyarakat direkonstruksi menjadi sains ilmiah relevan dengan 16 CP IPA Fase D, yaitu pengukuran, sifat zat, perubahan wujud, pemisahan campuran, perubahan kimia, suhu kalor, klasifikasi makhluk hidup, usaha pesawat sederhana, kekekalan energi, zat campuran, tekanan zat, asam-basa, hukum kekekalan massa, bioteknologi, zat aditif, serta keterkaitan sains lingkungan masyarakat. Implikasi penelitian ini memperkuat pembelajaran kontekstual dengan menjadikan lingkungan siswa sebagai laboratorium sains valid. Proses transformasi pengetahuan menyediakan jembatan kognitif bagi siswa serta mengubah paradigma masyarakat terhadap tradisi lokal menjadi warisan intelektual akademik. Strategi integrasi difokuskan pada dekonstruksi prinsip ilmiah guna meningkatkan literasi sains tanpa mendorong konsumsi alkohol. Pendokumentasian ini sekaligus menjamin keberlanjutan tradisi intelektual lokal melalui jalur pendidikan formal.

**Kata Kunci:** Arak Bali, Desa Les, Etnosains, Pembelajaran IPA.

# ETHNOSCIENCE EXPLORATION OF ARAK BALI MAKING PROCESS IN LES VILLAGE: A QUALITATIVE STUDY OF LOCAL WISDOM AND ITS RELEVANCE TO JUNIOR HIGH SCHOOL SCIENCE MATERIALS

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## ABSTRACT

This research aims to describe the production process of *Arak Bali* in Les Village, analyze the indigenous and scientific science concepts within it, and explain its relevance to Junior High School Science materials. A qualitative descriptive ethnoscience approach was utilized with a purposive sampling technique involving farmers, the owner of *Dapoer Bali Moela*, and Science teachers to obtain in-depth data. Research data were collected through field observations, interviews, documentation, and questionnaires, then analyzed using the Miles, Huberman, and Saldaña model. The results indicate that the uniqueness of *Arak Les* lies in the use of siwalan nectar (*Borassus flabellifer*) with optimal sugar content during the dry season (August) due to minimal rainwater dilution. Traditional tools used include *pengancan*, *bumbung*, *pengapit*, *pengiris*, *payuk gede*, *paon api*, *kekep*, *guci*, and the modern alcoholmeter instrument. Main raw materials include *tuak wayah*, *beem*, coconut husks, and *kelor* (moringa) firewood which produces a *smoky* aroma, as well as the addition of jackfruit and mango variants. Production stages comprise tapping, fermentation, distillation, and the *aging* process in closed *guci*. Public knowledge was reconstructed into scientific science relevant to 16 Phase D Science Learning Outcomes (CP): Measurement, Properties of Matter, Physical Changes of State, Separation of Mixtures, Chemical Changes, Temperature and Heat, Classification of Living Things, Work and Simple Machines, Conservation of Energy, Mixtures and Pure Substances, Pressure, Acids and Bases, Law of Conservation of Mass, Biotechnology, Additive Substances, and the Interconnection of Science, Environment, and Society. The implications of this research strengthen contextual learning by transforming the students' environment into a valid science laboratory. The knowledge transformation process provides a cognitive bridge for students and shifts the public paradigm regarding local traditions into an academic intellectual heritage. Integration strategies focus on the deconstruction of scientific principles to enhance science literacy without encouraging alcohol consumption. This documentation simultaneously ensures the sustainability of local intellectual traditions through formal education channels.

**Keywords:** Arak Bali, Les Village, Ethnoscience, Science Learning.